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AMERICAN JOURNAL

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JULY, 1895.

ON HYPOCHONDRIASIS AND NOSOPHOBIA.

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It is a singular fact that while medical authors of the seventeenth, eighteenth, and the first half of the nineteenth centuries have written very copiously on hypochondriasis, the more recent treatises on diseases of the nervous system by Rosenthal, Grasset, Buzzard, Ross, Oppenheim, and others should be absolutely silent on this subject. In Leube's valuable and exhaustive work on the diagnosis of nervous diseases, which appeared a few months ago, hypochondriasis is only mentioned by the way, in a few lines, as an apparently insignificant condition. The periodical literature of the day teems with papers on hysteria, chorea, epilepsy, and other nervous maladies, but the word hypochondriasis is rarely, if ever, met with. This neglect of the disease by modern writers, whom hardly anything escapes, might at first sight convey the notion that hypochondriasis had recently ceased to prevail, but such an explanation is contradicted by well-marked cases of it which we are in the habit of meeting in practice. Least of all could such an assumption be entertained in England, since this country has, more especially by French authors, always been considered as the real home of hypochondriasis, this being in their opinion due partly to our damp and foggy climate, which is believed to create a tendency to indigestion and liver affections, and partly to the odd mixture of aristocratic and democratic government obtaining here, which is said "to lead to constant agitation and endless disappointments."

To my mind the circumstance just mentioned is rather to be accounted for by the prominence which has of late years been given to the study of the group of symptoms known as neurasthenia, and for which I have recently proposed to substitute the term "encephalasthenia" as better suited for it. In the latter neurosis, various forms of fear, such as agoraphobia, claustrophobia, zoöphobia, and many other kinds of apparently groundless alarms and panics are prominent symptoms. Such patients entertain not infrequently a fear of the invasion of some disease or of impending death; for these latter conditions the terms nosophobia, pathophobia, and thanatophobia have been proposed, and have by some writers been used as equivalent with hypochondriasis. It is one of the objects of the present paper to draw a distinction between these conditions, and to show that hypochondriasis is a well-marked neurosis by itself, plainly distinguishable from other neuroses by its definite symptoms, course, and termination, differing, on the one hand, from nosophobia, and, on the other hand, from hypochondriacal insanity, with which it has been confounded by some writers on psychological medicine.

HYPOCHONDRIACAL INSANITY.—It is a great mistake to assume that most hypochondriacs are insane; on the contrary, they are frequently in good mental health for the ordinary purposes of life. There is certainly no lack of decision and no want of judgment. In the beginning of the affection more especially, the patient, far from experiencing any difficulty in going on with his usual occupations, often seems to find the exercise of his intellectual faculties actually easier than it was before. This is probably owing to the fact that when his attention is diverted into other channels he forgets to some extent the distressing sensations which he experiences when his mind is not fully occupied, so that intellectual exertion is an actual relief. It is only in the further progress and later stages of the complaint that no occupation or distraction will succeed in making him forget his misery. The mind, by being incessantly fixed on a single idea, is then apt to lose its balance, and the intellect may become deteriorated.

Simple hypochondriasis only seldom merges into hypochondriacal insanity or imbecility, and the difference between these several conditions seems to me to be a fundamental one. Thus I would call a man a hypochondriac who believes himself to be suffering from cancer of the liver because he experiences uneasy and distressing sensations in that organ or its neighborhood, and who keeps dwelling and brooding on his condition in spite of being assured by his medical attendant that he has no such disease. On the other hand, a man who expresses his belief that he has a load of hay in his head, or that his body has been changed into glass, or that he cannot move his legs because they have been turned into wood, or wax, or gold, or velvet, cannot be called a hypochondriac, but is either insane or imbecile. Another distinction between the two conditions is that in hypochondriacal insanity delusions are habitually entertained about the origin of the complaint, which the patient looks upon as a punishment inflicted by the Almighty for his sins, or as owing to poison administered to him by his friends or servants, or as caused by persons who magnetize or electrify him against his will, etc. The real hypochondriac is never subject to such delusions, but often hits the mark by attributing his illness to inheritance, overeating and drinking, excitement, overwork, and similar tangible causes.

Hypochondriacal symptoms are likewise apt to occur in persons suffering from general paralysis and other organic diseases of the nervous system, and are then mixed up with such objective signs as alteration in the size of the pupils, difficulty in speaking, reading, writing, and walking, and general failure of mental power, etc. Again, nocturnal epilepsy, which may exist without the patient or his friends being aware of it, may be accompanied with symptoms of hypochondriasis, and may thus be mistaken for the latter. The symptoms of hysteria, on the other hand, are so widely different from those of hypochondriasis that it is difficult to understand how such excellent observers as Sydenham, Hufeland, and others could have believed the two conditions to be identical. This error may perhaps be accounted for by the fact that the one neurosis is sometimes found complicated with the other. The symptoms of hysteria have of late been so pointedly described by numerous authors that I do not consider it necessary in this place to dwell upon the features by which they are distinguished from those of hypochondriasis.

THE NATURE OF HYPOCHONDRIASIS.—The characteristic feature of hypochondriasis is that the patient habitually experiences a feeling of profound illness, based on a variety of peculiarly distressing and harassing sensations to which he is subject, and which he refers to one or several of the viscera of his body. These sensations will, if sufficiently long continued, gradually engross his attention to such an extent that he can think of little else, and is led to brood over their significance and eventual issue. His imagination thus becomes disordered, and he creates for himself one or several imaginary illnesses from which he believes himself to be suffering. The sensations are, therefore, real, but the construction put upon them is false, and the further development of the neurosis hinges upon this peculiarity.

FORMS OF HYPOCHONDRIASIS.—In a considerable number of cases the head is the principal seat of the odd and distressing sensations which are experienced. There may be pain, but complaints are more frequently made of pressure, tightness, fulness, dryness, icy coldness or boiling heat, creaking, splitting, the ticking of a clock in the head, etc., explosions by which the brain appears to be shattered, a sensation as if ants or snakes were creeping or crawling about it, or as if the brain were pulled as hard as possible in different directions, or torn up by claws, or filled with live coals, etc. Where such and analogous feelings are frequently experienced we cannot be surprised that the patient should be led to imagine that he is suffering from some terrible and extraordinary brain disease, by which that organ has been softened or otherwise destroyed. He thinks that a bloodvessel or something else has burst in the head, that there is a cavity inside, or that he is going to have a stroke of apoplexy or paralysis, or to become insane, or die an idiot. In this form of the disease we also meet sometimes with that strange disorder of visual perceptions in which the sufferer finds on looking at himself in the glass that his face has quite a different appearance from what it used to have, or that, when he looks steadily at an object, it suddenly appears to him to go up and down, or otherwise to change its aspect. After reading a paper or a book for a few minutes he will suddenly start up and say that the lines are all awry and his sight is blurred or quite gone, or he finds that certain objects and colors are painful for him to look at. Where such visual disturbances occur every few minutes, as I have found them to do in certain cases, one can really not be surprised that the patient should lose his nervous balance, ask repeatedly whether he is going mad, and should talk all day long to his friends about nothing but the bewildering sensations which crowd on his attention. Such hallucinations of sight as I have just mentioned do not constitute a special kind of hypochondriasis, as has been asserted by Mendel, but seem to me only to show that a portion of the brain is suffering which is in intimate connection with the visual centres. I have known them to be connected with similar hallucinations of smell and taste, and such distressing sensations in the abdomen that the patient imagined himself to be suffering from obstructions of the bowel and cancer of the rectum. They are, therefore, only one of the numerous symptoms which are apt to occur in hypochondriasis, showing a complete disorder of function, or, as Sydenham expressed it, *ataxy of the animal spirits.*

In another set of cases there are few or no cephalic symptoms, and the chief seat of the distressing sensations is the *digestive tract.* The patient keeps looking at his tongue every few minutes, and has such odd sensations in it that he thinks an ulcer must be forming there; or he complains of choking sensations while eating or drinking; he imagines that he has lost the power of swallowing, and that hydrophobia is going to develop. There are often excessive belching, loud eructations, hiccough, regurgitation of food, nausea or vomiting, and such awful feelings in the stomach as to convince the sufferer that he has at the very least gastric ulcer or cancer. In other cases there are such fulness, heaviness, distention, and noise in the lower bowel that he imagines the gut to be obstructed, and thinks the anus closed, so that nothing can pass through him. The chest may likewise be the seat of painful and harassing sensations. Many patients complain of præcordial anxiety, or of a feeling that their heart is bursting or jumping out of the chest, or that it has ceased to beat; that circulation is no longer carried on, and that death is impending. They imagine that the heart is dried up, or otherwise diseased, subject to polypus, aneurism, or fatty degeneration. A dry cough and a troublesome expectoration of a little light or dark mucus, together with the feeling of a tight belt round the chest and difficulty in breathing, induce the belief that he is, or they believe that they are in, an advanced stage of consumption, or suffering from an incurable form of asthma. The pelvic organs are the seat of the trouble in very numerous instances, more especially in young men, and in women after forty. Thus a male patient will imagine himself to have become impotent, perhaps shortly after he has engaged himself to be married, and may commit suicide on the eve of matrimony. Or he may be troubled by anxious feelings about the consequences of early masturbation, gonorrhœa, or spermatorrhœa, and he may go from one surgeon to another to be sounded for stone in the bladder, when no stone exists. A woman may, on the other hand, be subject to such painful sensations in the womb that she comes to imagine herself to be the victim of uterine cancer, and consults one gynecologist after another with the view of having an operation performed.

Some cases are met with in which distress is felt from time to time in all parts of the body, without fixing itself habitually in any special spot. Such patients complain at the same interview of pain and heat in the head, throbbing in the temples, difficult articulation, choking in the throat, palpitations, discomfort in the right or left hypochondrium, pain and soreness in the bladder, numbness and aching in the limbs, etc., and may express their belief that they have, or are going to have, a fit of apoplexy, heart disease, aneurism, gastric ulcer, consumption of the bowels, rheumatism, fever, Bright's disease of the kidney, stone, and enlargement of the prostate.

HYPOCHONDRIACAL FEELINGS NOT IMAGINARY.—An unprejudiced observation of well-marked cases of this kind must lead us to the conclusion that the distressful feelings which are complained of by such patients, and described by them with the utmost minuteness and the most wearisome reiteration, month after month, and year by year, cannot be owing simply to imagination, as is often too readily assumed by the relations and medical attendants of the sufferer, but must have a substantial base in fact. When incessant complaints are made, and the doctor on examination does not discover any objective symptoms, he is after a time inclined to disregard the trouble altogether; while the friends of the patient finding that, in spite of all the horrors which he is never weary of describing to them, he does not really get much worse in the course of time, harden their hearts to him and tell him plainly that he is putting it on, and that if he would only rouse himself and pull himself together he would soon be all right again. Nothing is more apt to make the patient angry than to be told that his troubles are imaginary, and he will reply that he is not a child, but knows perfectly well what he is about and what troubles him. Such persons are indeed really ill, and it is as impossible for them to get better by "pulling themselves together" as it would be for a patient with tic douloureux to feel no pain, or for one with cystitis to pass normal urine. One cannot get rid of a disease simply by desiring or being willing to do so. Moreover, what object would be gained by these people through their incessant tedious complaints? They almost invariably become in course of time a nuisance to their friends and doctors, which led Portal to say that while hypochondriasis was hell for the patient, it was purgatory for the physician. Indeed, after a long interview with a hypochondriac—and he takes care that it should be long—the doctor sometimes feels almost as badly as the patient. The knowledge that he is a trouble to everybody who comes in contact with him cannot afford him any satisfaction; nor is it possible to explain by the assumption that such patients are simply "putting it on," why they should commit suicide, which they do sometimes in order to escape from sufferings which to them are well-nigh intolerable. One of the first to lay proper stress upon the sensations of the hypochondriac being real and not imaginary was Brachetsen, who had experienced a number of such feelings in his own person, and was, therefore, peculiarly qualified to give an opinion on this point. Nevertheless it is not at all uncommon to find that the complaints of these unfortunate persons are disbelieved and ridiculed.

COURSE OF THE DISEASE.—Where such harassing sensations as I have described are almost constantly present, the patient's character and disposition naturally undergo in course of time a complete change. The incessant distress he feels makes him sullen, morose, peevish, crotchety, irritable, and, above all, utterly selfish and inconsiderate to others. Being firmly convinced that he has some incurable and mortal illness, which appears to him unexampled and extraordinary, he eventually can think of nothing else. He is apt to weigh every particle of his food and drink; he examines his expectoration, sweat, urine, and feces, which he insists on submitting to his doctor, and holds forth about all these matters to his friends, or even strangers, without the least compunction or reserve. He is always in a state of despair, believes his end to be near, says that he will be glad to die, and, while fearing death more than anything else, may commit suicide on a sudden impulse. In consequence of his being in an incessant state of fear and alarm the vital functions are after a time improperly performed. Digestion and assimilation suffer; the mouth becomes dry; the tongue appears covered with a white, tough, tenacious mucus; there are constant hawking and belching (hence the old term, *morbus ructuosus* or *flatuosus*); the stomach may become dilated and the liver congested; the bowels are habitually constipated, and piles often make their appearance; the circulation also suffers; the pulse is slow, irregular, and intermittent; there is throbbing in the epigastrium, which may be seen and felt; the skin is rough and dry, the complexion yellowish or brown (hence the term *morbus niger*); the face pinched and hollow, the body wasted (hence the term *morbus resicatorius*); the urine dark and scanty or colorless and abundant, while insomnia becomes more troublesome as time goes on.

Causes of Hypochondriasis.—The course of the disease is apt to be protracted and severe where it is chiefly owing to neurotic inheritance; and comparatively short and slight where the predominant influence in its production has been exerted by exciting causes which have a prejudicial influence on the nutrition of the nervous system. Such causes are principally a sudden shock, domestic grief, loss of relations, crossed love, impaired social position, change from affluence to poverty, disappointed ambition, undue mental and physical strain, alcoholic and sexual excesses, the habitual abuse of purgatives, narcotics, and analgesics; certain acute infectious diseases, especially influenza and long-continued gastric and hepatic troubles. To these should be added gonorrhœa and sexual irregularities in men, and chronic leucorrhœa, menstrual derangements, the puerperal state, and the menopause in women. The neurosis is also apt to come on in women shortly after they have become engaged to be married, and after certain gynecological operations; sedentary habits and the reading of medical books, especially those issued by the quack fraternity, are likewise of influence. In cases where no exciting causes can be discovered the hypochondriasis has to be looked upon as purely constitutional. This is the worst form of the disease; it is rarely if ever cured, more especially when affecting patients of an advanced age, and is apt to end fatally after a protracted period of marasmus. Where, on the other hand, exciting causes have played the principal part in its production, we have to do with the accidental form of hypochondriasis, which offers a far more favorable prognosis. In this form, however, there is always a certain amount of predisposition as well; for many persons go through a protracted and painful illness, and through fearful troubles as well as excesses in life, without ever becoming hypochondriacs; and it is therefore necessary for this condition to be established that the imagination should be impressionable and easily affected by morbid sensations, so as to be induced to transform feelings into maladies, and thus to create diseases which have no real existence. This neurosis is most frequent between twenty and forty years of age, probably because the factors which are apt to produce it are then more active than at other periods of life. It occurs, however, occasionally in children and the aged. Men are more subject to it than women, the proportion in my practice having been about 70 per cent. for males and 30 per cent. for females, while about the reverse percentages for the sexes appears to prevail in hysteria. In some few cases the neurosis eventually merges into hypochondriacal insanity and dementia, while in others death may take place by intercurrent diseases, such as bronchitis or typhlitis, or by suicide.

CEREBRAL LOCALIZATION: THE VISCERAL CENTRE.—The symptoms of hypochondriasis have by many of our predecessors been ascribed to a faulty condition of the blood or humors, and by others to disease of the abdominal organs, more especially the spleen, liver, and stomach. No proofs for these assertions have been forthcoming, and Sydenham was the first who sought their origin elsewhere, stating that they arose "from an unequal distribution and rushing about, or ataxy, of the animal spirits." Translated into the language of the present day this means that hypochondriasis, being a disorder of the nervous system, it remains for us to see whether we can localize the seat of the disease in any special department or centre of the nervous system. The primary symptoms of the neurosis may be looked upon as disturbed sensations in the viscera of the body, and everything leads us to believe that for these, as for all other functions, there exists a special cortical centre. The so-called sensory-motor area in the brain, which is situated in the Rolandic convolutions, contains a regular series of definite and more or less strictly localized centres for motion and sensation of the thigh, leg, foot, and toes; of the head, eyes, face, tongue, and throat; and of the shoulder, elbow, wrist, and fingers. A normal condition of these centres imparts to us the proper feeling, and also the sense of power which, when in health, we have in all the voluntary muscles of the body; while an organic lesion or a functional disturbance in the sensory-motor area will lead to feelings of numbness, tingling, "pins and needles," and other abnormal sensations in any of the parts which are under the control of these convolutions. A similar centre unquestionably exists for the viscera of the body, regulating their organic sensibility. A normal condition of this centre would impart to us the feelings of happiness, comfort, and well-being which we experience when in health, and more especially when we are engaged in some mental or physical action which we enjoy, such as making a successful speech to a sympathetic audience, playing a game of skill in which we may be proficient, rowing, swimming, riding on horseback on a spirited animal, singing when we feel in good voice, etc.; here would also come in the feeling of satisfaction which we experience after a thoroughly good dinner, or after a comfortable act of defecation, urination, etc.; while, on the other hand, a disturbed condition of this centre would naturally lead to the perception of a great number and variety of odd, unpleasant, and distressing sensations, the peripheral perception and localization of which would be dependent upon the precise portion of the visceral centre which may happen to suffer, leading to nasty feelings in the head, heart, or lungs, or in the abdominal and pelvic viscera. Ataxy, to use Sydenham's expression, of the centre *in toto* would bring about that general form of hypochondriasis of which I have spoken, and in which the entire visceral sensibility seems to be disturbed. Again, we may assume that the *degree* of the peculiar feelings which trouble the hypochondriac will be proportional to the intensity of the disturbance affecting the centre in question.

The centre whose functions I have endeavored to describe undoubtedly exists, although its precise seat has not yet been ascertained. Some physiologists consider that it may be situated in the gyrus fornicatus, while others seek it in the occipital lobes. In connection with this point I would remark that there still exists a large latent zone in the cortex, more especially of the right hemisphere, with the functions of which we are as yet quite unacquainted. Neither experimental physiology nor morbid anatomy has as yet given us any exact clues to the functions of this latent zone, and in some portion of which the centre for visceral sensations may eventually be discovered. Up to the present time no pathological lesions have been found in the nerve-cells of the cortex in cases of hypochondriasis, although the extreme obstinacy of the symptoms in many cases would lead us to think that finer examinations of certain areas of the cortex, by Golgi's and Ramon de Cájal's methods, might, perhaps, reveal certain morbid changes, such as reversion to the fœtal type, or perhaps an extremely insidious form of sclerosis, which might account for the more obstinate and intractable forms of the disease.

Nosophobia.—Nosophobia presents an altogether different clinical aspect. In this condition there are no painful or perplexing sensations referred to any of the bodily organs, but the distress is purely mental, being the fear of some malady which the patient believes will overtake him. The definition which Mendel has given of hypochondriasis, as "a functional disease of the brain, the essential symptoms of which are fear and apprehension regarding one's own body," applies, therefore, rather to nosophobia than to hypochondriasis. A further striking difference between the two morbid conditions is that nosophobia is essentially transitory while hypochondriasis is apt to be long continued, and is, indeed, frequently permanent. During the last great epidemics of influenza I have met with a number of exquisite cases of nosophobia, that is, the fear of catching the prevailing infection. This condition lasted only as long as the epidemic remained at its height.

A patient who has been off and on under my care for various manifestations of encephalasthenia, came to me one morning in a state of great terror and alarm, saying that he had been unable to do anything or to sleep "for fear of getting the influenza," and asked me to give him a prescription for a preventive medicine. I did so, and joined with it such suggestions as appeared to me appropriate. He was then quite himself again for a few days, when one of his domestics was taken ill with the prevailing malady. This gave a fresh start to the nosophobia, and he became so upset that he left his home and took rooms at a hotel—by-the-way, the worst thing he could have done under the circumstances. A few days afterward he suddenly left London and went to a seaside place, which at that time enjoyed the reputation of being free from the epidemic. He did nothing else there all day long but read the accounts of the progress of the epidemic in the newspapers, and felt utterly wretched and unfit for anything all the time. When the epidemic subsided he returned to town and laughed about the unnecessary fuss which he had made. Since that time he has had similar short panics about catching whooping-cough and chicken-pox, which had broken out in his family, but has otherwise been quite well and able to enjoy life.

Similar cases have occurred at all times during the prevalence of great epidemics, more especially when there was a cholera-scare. Nor is such a condition altogether insignificant or unworthy of our attention, for persons have occasionally died of it.

Syphilophobia.—Apart from epidemics, nosophobia is chiefly seen in men who have acquired syphilis. In them the appearance of an acne-pustule on the sternum, or a slight laryngeal catarrh, or a feeling of soreness in the tongue, frequently leads to a short attack of nosophobia, or, as it is sometimes called, syphilophobia. The syphilophobist, however, is by no means always a hypochondriac, for he may be quite well and hearty when there are no such or similar exciting causes of fear as I have just mentioned. Indeed, he speedily forgets his troubles when assured by his physician that the symptoms which have alarmed him are of no consequence and have no connection with the diathesis from which he previously suffered.

Cases of disease occurring in some prominent person, and much discussed in the newspaper press, are likewise apt to give rise in neurotic individuals to temporary attacks of nosophobia. When the late Emperor of the French was operated upon for stone by Sir Henry Thompson, the case was very largely discussed in the daily papers, and numbers of persons were seized with the fear that they might have, or were going to have, stone in the bladder. Similar occurrences came under my notice when the case of the late Crown Prince of Germany attracted so much public attention; and I have quite recently seen a case owing to the reports which were being published about the illness of the Czar of Russia. Such things die a natural death as soon as public attention is diverted from that which gave rise to them, but while they last, they are often a source of great misery to those who are thus easily influenced.

It is therefore plain that the attack of nosophobia is always owing to some definite exciting-cause. When no such causes are active the patient is usually quite rational, and not at all moody or depressed; but where predisposition for it once exists the least unusual sign which may show itself in any part of the body may suffice to set the nosophobic machinery into motion. A congested conjunctiva, a little bleb on the tongue, a slight rash, a cough, a pain in the side, may make such a person quite wretched for the time being, because he fears that he will be seriously ill and may die. As soon, however, as the symptom which alarmed him has disappeared, or when the doctor has succeeded in calming his apprehensions by promising the speedy removal of the trouble, the patient generally forgets all about it, and feels quite well and happy again.

Thanatophobia.—Closely connected with nosophobia is a morbid fear of death by which some persons are troubled all their lives. For this condition Michéa has coined the truly barbarous name of Necrophobomania, and considers that this fear of death constitutes the essence of hypochondriasis. This is a complete misconception, as there are numbers of persons who live in constant fear of death without being at all hypochondriacal. Many aged people, for instance, have habitually a fear of death, without being subject to those distressing sensations which we have found to be characteristic of hypochondriasis, and without unduly brooding over the state of their health. For necrophobomania the term *thanatophobia* should be substituted, as more expressive and euphonious. Thanatophobia is not infrequently met with in young persons who are convinced that their death is at hand and that nothing can save them. I have known a young man who for years never went to bed without thinking that it was going to be his last night, and who took every night, mentally, leave from his friends and belongings. In some of these cases vicious habits contracted in early life have seemed to produce this condition, while in others no exciting cause could be discovered.

Influence of Suggestion.—A further difference between hypochondriasis and nosophobia is that suggestion has generally little or no influence on the former and a powerful effect on the latter condition A nosophobist who is afraid of having disease of the liver, because he has felt pain in the region of it, is, after a careful examination of that organ, delighted with the doctor's assurance that there is nothing serious the matter with him, and presently forgets all about it. An unfavorable prognosis, on the other hand, may drive such a man to despair.

A patient of mine who had had protracted gonorrhœa thought that he might have stricture, and consulted surgical authorities about this point from time to time. His urethra was perfectly sound, and he had been repeatedly assured that he had no stricture. On one such occasion, however, an eminent surgeon who happened to be out of temper, told him roughly that, although he had no stricture, he had the nearest thing to it. This gave the patient a terrible shock, and as he considered his case to be hopeless, he determined to commit suicide. For weeks subsequently he required. strict supervision, but eventually calmed down after repeated assurances that the opinion which had upset him so much was not seriously intended.

An unfavorable prognosis has hardly ever such an influence on the hypochondriac. On the contrary, such a patient is often quite pleased with it, partly because it corresponds to his own feelings of profound illness, and partly because he can boast of it to his friends, who may have expressed doubts about the reality of his sufferings. Nevertheless I consider it wrong to give a hopeless prognosis even in confirmed cases of hypochondriasis, as is often done, not only because we should consider the patient's feelings, which may be still further depressed by such an opinion, but also because, even in apparently desperate cases of that disorder, an improvement, and even a fair amount of recovery, may take place. A favorable prognosis, on the other hand, has little or no cheering influence on the hypochondriac, because he is so much distressed by the incessant painful sensations to which he is subject, and habitually finds so little relief from the various modes of treatment which are used in his case, that he is quite convinced of the incurability of his illness, and considers a doctor who promises to cure him to be ignorant and presumptuous. But although our efforts to relieve the hypochondriac are so frequently unavailing, the doctor's visits have often, all the same, a good influence, for the patient is generally a little happier afterward from having relieved his mind to a sympathetic listener. Another difference between the two conditions is that the subject of nosophobia has absolute and unquestioning faith in his physician, and follows the prescribed treatment in the most punctual and systematic manner, while the hypochondriac has generally a poor opinion of medicines, and frequently refuses to take those which have been ordered for him. He often says that most drugs are too strong for him, and more likely to do him harm than good. He therefore generally shirks taking his dose, and I have often thought that medical treatment might produce a better effect in such cases than it usually does if it were more strictly followed.

TREATMENT.—There is no specific for hypochondriasis, and Bronner's remark, "Magnus mihi erit Apollo qui hypochondriacum ad sanitatem reduxerit," is as true now as it was two hundred years ago. Nervine tonics, such as arsenic, strychnine, phosphorus, and others, have generally only a temporary effect, while sedatives, such as bromides, hyoscyamus, and opiates, are habitually disappointing in their action. The constant galvanic current, which does so much good in encephalasthenia and some forms of hysteria, does not appear to benefit the hypochondriac in the same manner. Moral and hygienic treatment, indeed, often does more good than drugs. It is important to cheer the patient up with the hope of eventual recovery from his troubles, which indeed may happen after years of misery. Frequent change of air and scene and distraction by society are useful. It is essential to see that the secretions are kept in good order, and to enjoin great moderation in eating and drinking. In some patients a purely vegetarian or milk diet will do good; and in very obstinate cases a seton or issue in the arm may be used. A very influential agent in combating the hypochondriacal condition is active exercise; and amongst the various forms of exercise I would recommend bicycling and tricycling for the young, and riding on horseback for those somewhat more advanced in life. The exhilarating effects of the latter form of exercise are well described by one of our ablest novelists, who says: "I know few counsellors more exhilarating than a spirited horse. I do not wonder that the Roman emperor made a consul of his steed. On horseback I always best feel my powers and survey my resources; on horseback I always originate my subtlest schemes and plan their ablest execution. Give me but a light rein and a free bound and I am Cicero—Cato—Cæsar; dismount me and I become a mere clod of the earth, which you condemn me to touch; fire, energy, ethereality have departed. I am the soil without the sun, the cask without the wine, the garments without the man." Let us, therefore, by all means insist on this excellent practice being pursued by our hypochondriacal patients.

THE OPERATIVE TREATMENT OF HERNIA.

By W. S. Halsted, M.D.,
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The problem is to close durably a rent in the abdominal wall and to provide for the safe transmission of the spermatic cord. The cord is the first cause of the hernia and the ultimate obstacle to its cure. If we could ignore the cord, the solution of the problem would be comparatively easy. The larger the cord the greater the liability to a recurrence of the hernia. The size of the cord depends chiefly upon the veins. Then why not reduce the size of the cord by excising such veins as may be superfluous? By this procedure the cord may usually be reduced to less than one-third, and sometimes to one-fifth or one-sixth of its original size. Two quite distinct sets of veins accompany the vas deferens. When the tunica vaginalis propria funiculi spermatici has been divided and the elements of the cord are gently spread out by the fingers the larger superfluous bundle of veins lies at some distance from the vas deferens. A few very delicate veins hug the vas deferens closely. The veins which we designate as "superfluous" are those which I regularly excise in operations for varicocele. We have not thus far seen atrophy[1] of the testicle follow excision of these veins. Our cases have been observed with especial reference to this point. I think that there can be little doubt as to the advisability of reducing the size of the cord by excising these veins when they form a large bundle.

Let us consider next the closing of the hole in the abdominal wall. What tissues shall we employ and how shall we bring these tissues together? It has been demonstrated too often that the stitching of the pillars of the ring does not suffice. We must do more than bring free edges of the aponeurosis of the external oblique muscle together. Fortunately we have muscles so near at hand and so placed as to suggest at once a simple, and what has proved to be an entirely effective, plastic operation. After cutting through the anterior wall of the canal down to the sac, we continue the incision in the same line, outward and a little upward, through the internal oblique and transversalis muscles for an inch or less. We divide the muscle-bundles about at right-angles to their long axes. Thus two flaps of muscle are obtained, which we draw down into the canal and include in the deep stitches in the way to be described. The uppermost bundles of the cremaster muscle are often so heavy that we can use them for the same purpose. We close the rent which Nature has made and which the knife has enlarged with mattress-sutures, precisely as we close all abdominal wounds. The mattress-suture is to be preferred to other sutures because it constricts the tissues less, holds greater surfaces in contact, and insures, ultimately, more accurate apposition of the several planes of tissue. These stitches bring surfaces together at the outset, just as in sutures of the intestines the walls of the intestine, irrespective of the stitch, are always brought together. The walls of the intestine are so inverted that the muscular surfaces (so-called peritoneal surfaces) are extensively in contact, the cut edges never. And yet after a few weeks no trace of the inversion remains. Sometimes an almost imperceptible dark line is left to indicate the position of the cicatrix. With the aid of the microscope we see that the finest layer has met its fellow and may be traced uninterruptedly through the cicatrix, and were it not for the rudimentary character of a few of the villi we might search in vain for evidence of the solution in continuity.

Dr. Mall,[2] for whom I performed some experiments which necessitated circular suture of the intestine, describes the microscopical appearance of an intestinal suture of sixty-four days as follows: "Fig. 12 shows a section of this suture which strikes the stitches. Were it not for this stitch and a slight infiltration of that part with leucocytes the point of suture could not be made out. To be sure, the microscope shows very rudimentary villi which could easily be overlooked when compared with the other folds which this intestine contains. The crypts are fully regenerated and cannot be differentiated from the surrounding crypts. The stratum fibrosum, muscularis mucosæ, submucosa, and two muscular coats are all reproduced and form one straight line. The regeneration is so complete that the two layers of the regenerated muscularis mucosæ can be made out."

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[1] May 15, 1895. In three of our cases atrophy of the testicle has been caused by the operation. The atrophy is probably due to the excision of the veins, for it has occurred thus far only in the cases in which the veins were excised.—W. S. HALSTED.

[2] Johns Hopkins Hospital Reports, vol. i. p. 90.

There are usually six of these deep stitches. They are taken very close together, not more than 1 cm. apart. The two arms of each stitch are 7 or 8 mm. apart. The vas deferens, with its arteries and remaining veins, is brought forward between the two outermost stitches. These two stitches are closer together than the others and embrace the cord snugly. The outer arm of the outermost stitch is sometimes passed through uncut muscle.

When the deep wound is closed muscle should be seen throughout the greater part of it, projecting between the cut edges of the aponeurosis of the external oblique muscle. These edges are then made to embrace the cord more snugly at the point where it passes between them by two very fine stitches. The skin-incision is closed with an uninterrupted suture. As we approach, in stitching, the lower inner angle of the deep wound the muscle becomes thinner and finally gives out. The aponeurosis of the external oblique, with perhaps a few fibres of the cremaster, is all that is left for the innermost stitch. If the aponeurosis at this point shows, as it sometimes does, a tendency to split when it is vigorously pulled upon by a stitch, we gather or pucker it up by taking running mattress-sutures in place of the ordinary mattress-sutures. In running the stitches I try to avoid perforating the aponeurosis. The puckering is, of course, only a temporary affair, but the running stitches enable us to close the lower angle of the deep wound with less damage to the aponeurosis.

In short, we close our hernia-wounds precisely as we close all wounds of the abdomen, except that in hernia alone we stitch the peritoneum separately. In wounds of the linea alba we split the sheaths of the recti muscle, whether we are operating for the cure of hernia or not, that we may oppose broad surfaces of muscle throughout the whole length of the incision.[1] For the same reason, and also that we may transplant the cord in the male and the round ligament in the female, we divide the internal oblique and transversalis muscles when operating for the cure of inguinal hernia.

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[1] In a recent number of the Centralblatt für Chirurgie, P. Bruns, of Tübingen, describes and recommends a method for the cure of ruptures in the linea alba which, except that he does not employ the mattress-sutures, is identically ours for closing all incisions in the linea alba.

I shall say but a few words at this time about our results, for Dr. Bloodgood will soon publish a complete report of them.

We have operated one hundred and sixty-five times for the cure of various forms of hernia in both sexes without a death from the operation. One hundred and six males with inguinal hernia have been operated upon by my method. The wounds, with few exceptions, have healed absolutely *per primam.* Thus far we have been unable to find a single recurrence in cases whose wounds healed *per primam.* The case which furnishes the nearest approach to a recurrence was operated upon about three years ago and is now under daily observation. The man has the physiognomy of a Hindoo, but is classed as a negro. He is about thirty-five years old, not much more than half-witted, and was on admission, and still is, much emaciated and exceedingly feeble. Within the first twenty-fours he got out of bed. Possibly he repeated this act of disobedience daily. The wound healed absolutely *per primam.* There is at present, but only on coughing, a bulging of the very thin, flabby abdominal wall from the inner almost to the outer end of the scar. The local condition is not bad enough to demand a second operation.

I dislike to have my operation referred to as a modification of Bassini's operation. The operations are undoubtedly original with both of us, and mine was described several months before we had heard of Bassini's operation. You may know that in my operation the cord which is transplanted out into the thicker muscle lies superficial to the aponeurosis of the external oblique muscle, and not, as in Bassini's operation, in a fold of and under this aponeurosis. In Bassini's operation the circulation of the aponeurosis must be impaired, both by the foldings of the aponeurosis near Poupart's ligament and by the stitches which temporarily maintain them. Furthermore, Bassini's method does not, as he claims, re-establish the obliquity of the canal. Bassini believes that he restores the inguinal canal to its physiological condition when he makes "a canal with two openings, an abdominal and a subcutaneous opening, and with two walls, a posterior and an anterior, through the middle of which the cord passes obliquely." But the original canal is not by any means an affair so simple as Bassini's. To reproduce the equivalent, anatomically and physiologically, of the inguinal canal is for us impossible.

For about one year I have sewed all of my hernia-wounds with silver wire and have covered them with silver-foil. Without exception the wounds have healed absolutely *per primam.* Not a single stitch-abscess has been observed either during or subsequent to the healing of the wound. Such absolutely perfect healing of the hernia-wounds we have not had heretofore, and I am convinced that the use of silver as a suture-material has contributed somewhat to this result. We have tested the effect of silver on the growth of the more common pyogenic organisms. I have here two Pétri-plates which Dr. Bolton has kindly prepared for me. They have both been inoculated with staphylococcus pyogenes aureus. In the centre of each plate is a piece of silver-foil, such as we use on our wounds. Just outside, and completely surrounding the foil, is a perfectly clear zone several millimetres wide. Except for the clear zone and a slightly intensified zone just outside of this, the agar is quite uniformly cloudy. The cloudiness is due to the growth of the micro-organisms with which the agar has been inoculated. Dr. Bolton has studied the effects of various metals on the growth of bacteria, and has recently read a most interesting paper on this subject before the Association of American Physicians. With cadium, zinc, and copper, Dr. Bolton observed that the inhibitory action was greater than with silver. Prior to my knowledge of Dr. Bolton's experiments I tried to use copper and brass foil for protective, and copper and brass wire for sutures; but these metals corroded the tissues so much that I soon stopped using them. We do not hesitate to employ buried sutures of silver wire in sewing tissues on the confines of an infected region. In cases of acute suppurative appendicitis, for example, we close the wound in the abdominal wall with deep, interrupted, buried sutures.[1] These wounds are drained by a few strips of gauze. Two of the sutures are taken very close to this gauze, and sometimes must pass through tissues which are infected. Not even in such cases have we ever had a stitch-abscess. Once a silver stitch and once a silver bone-plate, having been exposed to view and to the air by necrosis of the overlying tissues, were allowed to remain and to become imbedded in the ganulations of the wound, which healed by suppuration. Neither the stitch nor the plate at any time caused the slightest disturbance in the tissues or inconvenience to the patient.

We have already observed much in the use of silver wire that is worth recording and enough to satisfy us that it will play a new and more important *rôle* in the surgery of the near future.

THREE CASES OF DERMATITIS HERPETIFORMIS DUE TO PREGNANCY (HERPES GESTATIONIS).

By George T. Elliot, M.D.,
of New York City.

The number of cases of the herpes gestationis of Milton and Bulkley recorded in literature is not so great that the report of further ones need be useless. Up to 1888, Brocq[2] was only able to collect some twenty-two, and since then I have not been able to find more than ten additional examples of the process. Among these latter is one which was reported by me in 1892, in connection with some other cases of dermatitis herpetiformis of uterine origin,[1] and I classed it with that disease instead of regarding it as an instance of a separate and distinctive process. Duhring had previously claimed that herpes gestationis was only a phase of the dermatitis herpetiformis first described and differentiated by himself, and Brocq had ably supported that position in his *résumé* of the entire subject, so that I was thus in entire agreement with them. The case I referred to furnished, moreover, so strong a proof of the position taken that Brocq, in reviewing it in 1893,[2] stated "it seems difficult now still to make two entirely different diseases of dermatitis herpetiformis and of herpes gestationis." This case was characterized by being the first one which, possessing all the requisites for the diagnosis of herpes gestationis, yet persisted, contrary to the course of all others recorded, continuously for several years from its primary inception, and in the entire absence of any new pregnancies and during its existence, presented, moreover, none but those symptoms belonging in a greater or less degree to every case of dermatitis herpetiformis, of whatever origin or from whatever cause. The following examples of the process are reported as "dermatitis herpetiformis," and not as "herpes gestationis," in view of the opinion expressed; and one of them shows, although in a much less degree, much the same tendency to persistency for a long period of time after termination of the first pregnancy, as did the case reported by me in 1892.

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[1] Vide Bulletin of the Johns Hopkins Hospital, November, 1894.

[2] Brocq: De la Dermatite herpetiforme de Duhring. Paris, 1888.

CASE I.—Mrs. ——, aged twenty-eight years, was seen by me March 9, 1894, in consultation with Dr. Blundell, of Paterson, N. J. The patient had always enjoyed good health, and her position in life enabled her to live in ease and comfort, without worries, anxieties, or other mental or moral shocks. Her first pregnancy occurred in 1888 and ran a natural course. The labor was normal and uncomplicated, but three days after the birth of the child an eruption appeared on the hands and feet. It was accompanied by intense burning and itching, and consisted of bullæ, some as large as a pigeon's egg. Extension took place rapidly and similar lesions appeared over the extremities, but on the body only erythematous blotches were noticed. This eruption gradually subsided, but was followed by others cropping out at variable intervals, made up of vesicles, small bullæ, and erythematous patches, accompanied by intense burning and itching. At the end of a year the cutaneous disturbances gradually declined and disappeared.

In 1891, she again became pregnant and the same phenomena developed, but much earlier—in the sixth month of pregnancy. The process began on the same regions as before, and its morbid manifestations were entirely similar to those seen in the primary outbreak. Great soreness, itching, and burning accompanied the eruption, and insomnia, nervous irritability, etc., were the consequences. During the remainder of her pregnancy the process appeared in successive crops, and after confinement it became exceedingly aggravated. Severe outbreaks continued for four months and then a gradual cessation occurred, though even up to the present pregnancy there would be from time to time slight eruptions of itchy and burning "spots," which would last a few days and then disappear. The patient's third pregnancy began in 1893, and when I saw her she was in the sixth month. She stated to me that the eruption had become manifested even before she knew that she was pregnant. The lesions had been preceded by intense burning and itching, and they had first appeared on the abdomen, and next on the feet and legs. A little later, they had cropped out on the hands and on the arms, but none had developed on the face. The abdomen had been severely affected, but the back had been almost entirely free. The subjective symptoms had been intense from the first, and owing to their being worse at night insomnia, nervous irritability, and general debility had ensued. The itching and burning were, however, not very severe when the patient remained quiet, but the slightest excitement increased her suffering very greatly. When I saw the case the woman was apparently in a good condition of health, though a little anæmic. She was well nourished, her functions were natural, the pregnancy produced no gastric or other disturbances. The renal conditions were likewise unaffected. In fact, the eruption and its entailed discomforts were all she complained of. The lesions consisted of bullæ of all sizes, from a pin-head to a nut; tense, prominent, and filled with clear serum. There were also more or less large groups of vesicles and papulo-vesicles, but no pustules. Here and there were patches of large size, composed of a slightly depressed, pale centre, bounded by an elevated, gyrate, red, urticarial-looking border about a quarter of an inch broad. There were others which were solid, elevated, sharply defined, of a bright-red color, and varying in size from a silver dollar to two or more inches in diameter. Scratch-marks, crusts, and fading blotches were also abundantly distributed between the new and fresh lesions.

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[1] Elliot: AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 1892.

[2] Annales de Dermatologie et de Syph., January, 1893.

Dr. Blundell has kindly informed me that the eruption continued during the remainder of the pregnancy, uninfluenced by any treatment. After confinement, it became greatly aggravated and then gradually subsided, ceasing at the end of about four months. The last report received states that the patient is again pregnant, but no mention is made in regard to the reappearance of the skin affection.

Case II.—Mrs. ——, aged thirty-one years, came under my care March, 1894. She had been married in 1882, and her first child had been born one year later. Between this child and her second one, born in 1889, she had had six miscarriages, but she would not state whether they had occurred spontaneously or had been induced. She was confined of her second child in April, 1889, and the cutaneous process had first appeared in the sixth month of this pregnancy. Synchronously with its inception she had had watery vaginal discharges at short intervals, and these continued up to the time of her confinement. The cutaneous symptoms in this attack consisted primarily of intense pruritus and burning of the palms and soles, followed by the formation of bullæ on the hands and feet, and later on the abdomen around the umbilicus. On these surfaces the eruption remained localized during the remainder of the pregnancy, but after delivery a more or less general eruption of bullæ, preceded by intense burning and itching, appeared over the body. For four to five weeks afterward these lesions arose in successive crops, and then the process gradually subsided, the patient being at the end of three months entirely free from the cutaneous disturbance.

Between the pregnancy of 1889 and her present one the woman has had two miscarriages—one at five and the other at three months. During these pregnancies no skin symptoms developed. After her last miscarriage she had had severe flooding every two to three weeks up to October 1, 1893, when she says there was only a show. She thought she had felt life in January, 1894. About February 1st the first manifestations of the cutaneous process were noticed in the form of intense itching and of small "blisters" on the palms and the fingers and on the soles, while bullæ appeared around the umbilicus. Their outbreak occurred in successive crops with great rapidity, and she entered Bellevue Hospital in Dr. Brannan's service on February 6th. The eruption became, however, steadily severer in degree and extent, and when I saw her about ten days later in consultation with him the entire cutaneous surface was affected and covered with erythematous patches, groups of vesicles and papulovesicles, bullæ, and crusts, while the woman complained of the most intense itching and burning. After leaving the hospital she came to my clinic at Demilt Dispensary about March 1st. On examination she gave me the details of her prior history as I have already enumerated them, stating in addition, however, that previous to her marriage she had been in good health, and that subsequent to it she had felt well and had been able to work, notwithstanding her many miscarriages. She was judged to be pregnant about six months. She was very anæmic and weak and in a very depressed somatic condition. Constipation was marked, a movement of the bowels not having occurred in eight days; the tongue was badly coated, the breath very foul, and complete anorexia existed. The eruption was found to be more or less generalized over the entire body, following, however, no particular rule in its localization. Its primary outbreak had been preceded by an intense burning and itching on the surfaces upon which the lesions originally developed, and this feature was a constant one, occurring prior to every outcropping which subsequently took place. The backs of the hands were occupied by erythematous, irregularly shaped patches, upon which were groups of small crusts, and by papules, single and grouped. Purplish stains were also present as residua of older lesions. The palms were not affected. The arms, over both their flexor and extensor surfaces, were covered to the shoulders with erythematous patches, papules, vesicles, and bullæ, distributed without order or arrangement. The papules, papulo-vesicles, and vesicles were a pin-head to a small pea in size and were arranged in groups. The bullæ were as large as a buckshot to a penny, tense and resistant, with clear, turbid, or purulent contents. Crusts were also abundant, and the arms were in addition mottled with dark-red and purplish blotches, evidences of former lesions.

The face was entirely free, except for one bulla on the chin; but over the thorax there were numerous groups of papules and vesicles and discrete bullæ. A curious phenomenon was noted around each nipple, it being encircled at a distance of about half an inch from the areola by a narrow, slightly elevated, scalloped erythematous band, which formed an irregular ring. The back was thickly covered with groups of vesicles and papules, with bullæ, crusts, and stains. On the abdomen the papular and vesicular groups predominated, but in the groins there were only large bullæ. The legs and feet presented the same appearances as were noted on the arms.

The mucous membranes were entirely free from the eruption. The patient remained under observation for a month. During that time it was noted that crop after crop of vesicles, papules, and bullæ appeared, subsided, and were replaced by new outbreaks. The pruritus and burning were intense and not ameliorated by any treatment. The patient was lost sight of, and the further course and termination of the pregnancy and the cutaneous process are not known.

Case III.—Female, Russian, aged thirty years, entered the Skin and Cancer Hospital (Dr. Bulkley's service) February 21, 1894. She had always been strong and well; gave no history of syphilis or of any cutaneous disease different or similar to the one she was then suffering from. Her first pregnancy terminated on January 10, 1894, when she had given birth to a full-term, but dead, child. Her pregnancy had been normal, and she was unable to give any traumatic or other cause for the death of the child *in utero*. She stated that three days before her confinement a number of intensely pruritic papules and erythematous patches had appeared over the abdomen. Vesicles developed a day or two after delivery and enlarged rapidly to the size of a buckshot, and even larger. Rupture then took place and the exposed raw, moist surface became crusted over. Rapid extension of the eruption ensued and lesions developed in quick succession over the extremities, the trunk, and the scalp. Similar lesions, always accompanied by intense burning and itching, kept cropping out steadily up to the date of her admission to the hospital, and her general condition deteriorated greatly. What had been the course of the puerperium, whether she had any chills, temperature, localized peritonitis, or other morbid symptoms, could not be ascertained from the patient.

The woman was found on examination to be poorly nourished. The bowels were costive and she could not retain any solid food in the stomach. The tongue was thickly furred. There were no remains of lochia or of offensive discharges from the genitals, no tenderness or sensitiveness of the uterus or pelvic organs. No renal disturbances. Hemorrhoids and a slight prolapse of the rectum were alone noted. The patient was restless and anxious, mentally excited, and somewhat hysterical. Her temperature was 100½°; pulse 110.

The eruption occupied more or less of the entire body. The chest and abdomen were covered with crusts. The major part of the back was raw and denuded of epidermis, but here and there were a few bullæ, about as large as a nut, filled with clear serum. Over the arms, legs, feet, and hands there were a large number of bullæ of all sizes: some recent and tense, others older and flaccid, others already having formed crusts. On the lower half of the legs these lesions had become confluent and their rupture left a raw-looking surface, which quickly became crusted over. There were, in addition to the bullæ and crusts, erythematous patches and a few papular and vesicular aggregations. Many stains and scratch-marks were also present. The burning and itching caused great suffering and were bitterly complained of.

While in the hospital the course of the eruption consisted in a succession of outbreaks of bullous lesions, preceded and accompanied by intense itching. Her general systemic condition deteriorated steadily; her temperature varied between 99½° and 100°, evening rise and morning fall; she grew weaker and weaker, the stomach refused to retain any nourishment, tympanites developed, and the patient died March 27th. No autopsy could be obtained.

Notwithstanding the differences in degree, mode of inception, and duration of these cases, yet they all show distinctly those clinical objective and subjective symptoms and course characterizing dermatitis herpetiformis in general. Arising in connection with pregnancy includes them in that phase of the disease called herpes gestationis, but in the multiformity of their lesions, the constant relapses and succession of outbreaks, accompanied by intense burning and itching, we find the cardinal symptoms of Duhring's disease, and Case I. appears to me to emphasize this view much in the same manner as did the case reported by me in 1892. It is true that it began only three days after delivery, but that does not exclude it from the category of those cases arising from pregnancy, as similar instances have already been recorded. Besides, the eruption developed earlier in each successive conception, as has been repeatedly observed by others, and in its whole behavior, except its long continuance after confinement, it agreed with those other cases reported in literature. It is, however, in the particular of its long duration after pregnancy that the case is important. In all those previously seen, with the exception of the one I recorded in 1892, the eruption underwent aggravation within the first few days after labor, and then disappeared rapidly in a few days or weeks, rarely lasting two to three months, and it became of a chronic type and of long duration only after repeated attacks occurring in successive pregnancies. In the present case, however, the manifestations of the process continued cropping out in a series of outbreaks for a year after the primary attack, and its tendency to chronicity was furthermore shown, after the pregnancy in 1891, by its continued outbreaks from time to time until the conception in 1893, when it became continuous, and only ceased four months after the confinement in 1894. This sudden termination is certainly curious, but not any more susceptible of explanation, however, than its non-recurrence in the present or last pregnancy. Notwithstanding these latter peculiarities the case in its prior course and behavior appears to me, however, to furnish an additional link connecting herpes gestationis with dermatitis herpetiformis, and to aid in establishing the fact that the former is only a phase of the latter.

In Case II. we see more particularly the usual and typical course of herpes gestationis. Developing in the first pregnancy after her numerous miscarriages, it lasted till the child was born, then becoming greatly aggravated it subsided and ceased altogether at the end of about three months. After a long period of freedom the process recurred in the pregnancy in 1894. She then came under my care, and the eruption in its objective and subjective symptoms was such that were it not known that conception existed, no other diagnosis but that of dermatitis herpetiformis would have been made. In fact, my experience in studying six personal cases of herpes gestationis, and in comparing them with thirty-five examples of dermatitis herpetiformis originating from causes other than pregnancy, and which have been under my care, would lead me to state that only the knowledge that the patient was a woman with an impregnated uterus would enable the diagnosis herpes gestationis to be made instead of that of Duhring's disease. The former is characterized by having a definite factor—pregnancy—as its determining cause, but I have failed to see how in its course and general symptomatology it differed in any way from those cases arising under the influence of some other cause than that particular one.

Case III. is of interest owing to its fatal termination. The patient's death can, however, not be ascribed to the cutaneous disease, but unquestionably to septicæmia, from which she was suffering when she entered the hospital. It was not possible to determine the starting-point of the septic process, whether from the uterus or from the skin. In whatever way it developed, however, it is probable that the condition of the skin contributed to it, as the raw state of a large portion of the surface, covered with decomposing secretions, crusts, and dirt, certainly favored septic absorption. That the case was one of the same nature as the other two included here seems to me unquestionable, in view of its inception during pregnancy, its aggravation after delivery, the multiformity of its lesions, the course it ran, and the intense subjective symptoms preceding and accompanying its outbreaks. In these cardinal features the case agreed with other examples of this phase of dermatitis herpetiformis, and I have, therefore, included it in this paper.

It cannot, unfortunately, be said that our knowledge has progressed in regard to the mode of origin and production of dermatitis herpetiformis. What systemic conditions favor its development and what changes preside at its inception and outbreak are entirely unknown. We are only able to judge from clinical study and observation of its etiological moments, its course, and its response to every and any disturbance of the nervous system, that it is essentially a dermatoneurosis, controlled in its phases and manifestations by certain changes in the nervous system, of the nature of which, however, we have absolutely no conception, though, owing to the disease being often transitory, often cured, and not accompanied by or developing grave cerebral or other conditions, we are justified in believing that they are probably only functional and not organic. Since I expressed, in former papers, my belief in the neurotic origin and nature of the disease, all the cases coming under my observation have only strengthened that opinion, and inasmuch as the most manifold causes acting upon the nervous system in one way or another have been found sufficient to produce the same effect—dermatitis herpetiformis—there can be no reason to exclude from the same category the pregnant uterus as a determining cause of the disease, in view of the neurotic disturbances in the economy naturally incident to that condition. Why, however, the effects of these disturbances are expended in one woman upon the skin and in another they are not, are questions awaiting solution, and an explanation for them cannot be at present even surmised.

The treatment of this cutaneous disease does not promise brilliant results nor afford great satisfaction. When it has been possible to discover and reach its basic determining cause entire relief and even a cure have been sometimes obtained by me; but when the medication was purely a symptomatic one I have not seen any beneficial effects derived beyond a certain amount of relief from the subjective discomforts of the patient. Internally, some cases have been benefited by arsenic, others by atropia, or pilocarpine, or nux vomica in large doses, or by alkaline treatment; but I have never seen any two react in the same manner toward any one drug or combination of drugs. Externally, I have obtained more benefit from ichthyol than any other application, it not being surpassed even by the tars. Sulphur, resorcin, salicylic acid, menthol, ergot, etc., have all failed in my hands, and the most reliable has been the ichthyol. Of course, in dermatitis herpetiformis resulting from pregnancy there are no measures indicated except palliative applications, which may relieve the burning and itching. The large majority of the cases ceasing after delivery of the child, matters should be allowed to take their usual course, though instances may arise in which the induction of abortion may be necessary. Such a course would, however, have to depend more upon the complications of the pregnancy and the condition of the woman than upon the discomfort, suffering, etc., produced by the process on the skin. In a case seen by me in consultation some time ago, such a procedure was judged absolutely necessary, in view of the albuminuria from which the woman suffered. The cutaneous disease had been severe from the beginning of the pregnancy, and had caused intense suffering, insomnia, and nervous disturbance, etc. The pruritus subsided in a couple of days after the evacuation of the four months' pregnant uterus, and the lesions disappeared rapidly, the skin being entirely clear in about ten days. Only in an extreme case, however, would such measures be indicated, and these, fortuaately, are not of every-day occurrence.

14 West Thirty-third Street.

LATE INFECTION IN THE PUERPERAL STATE,

BEING A PLEA FOR THE ROUTINE MANUAL EXAMINATION OF THE INTERIOR OF THE UTERUS AFTER THE COMPLETION OF THE THIRD STAGE OF LABOR.

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As a preface to the remarks I desire to make in regard to that interesting and frequently obscure topic, late infection in the puerperal state, I append in abstract the salient points in the history of a number of cases which have recently come under my observation.

Case I.—This case was seen in consultation on the twelfth day after delivery. The woman was a primipara in the better walks of life, and both as regards the medical attendant and the nurse had had the best care that could be obtained. The labor had lasted about fifteen hours and the woman had practically delivered herself. The pelvic floor was practically uninjured and the course of the puerperium up to the twelfth day was in every respect normal. On the evening of this day the patient had a slight chill associated with rise of temperature to 101°. This was the first rise during the puerperal state. The next morning the temperature was 99°, but the woman was listless, had lost her appetite, and the husband, becoming alarmed, requested a consultation. I was selected, and I saw the woman in the afternoon. The temperature was then 101°; the abdomen was soft and offered no special point of tenderness; there was a slight reddish discharge from the vagina, absolutely inodorous. I examined the woman carefully and was unable to detect anything abnormal, except a larger uterus than it is customary to find at this late date in the puerperium, as also more patency of the cervical canal. These factors are, however, purely relative and hardly influenced me in the advice which I gave, which was exploration of the uterus. I gave this advice, although assured by the physician in attendance that the third stage of labor had been completed after a normal fashion. Under complete asepsis the cervical canal was dilated sufficiently to enable me to insert an ordinary oval curette, and a piece of membrane the size of a silver dollar was removed. The uterus was washed out with creolin solution and a strip of gauze was carried to the fundus. This was removed the following day and the constitutional disturbance was ended.

Case II.—This case was seen in consultation on the fourteenth day after normal delivery. The woman was also in the better walks of life, and I was familiar with the capability both of the physician who attended her and of the nurse. The course of the puerperium had been normal in every respect and the woman was out of bed, the physician having practically discharged her. She had a chill on the afternoon of the fourteenth day, followed by rise of temperature to 102°. I saw her

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[1] Read by title before the American Gynecological Society, May, 1895.

that evening and found everything normal except a larger uterus than it is customary to find at this date after delivery. The cervical canal was open to the tip of the finger and there was a stale odor to the slight lochial discharge. I advised immediate exploration of the uterus, and we removed a piece of placenta about three inches square, although the physician had carefully examined the placenta on delivery and had found it intact. This woman's constitutional symptoms were also promptly checked by the curetting, or rather by the removal of the cause.

Case III.—This case was seen in consultation on the tenth day after delivery at term. The labor had been terminated artificially and the pelvic floor had been damaged, but this lesion had been at once repaired. The stitches had been removed on the seventh day and good union had been secured. The course of the puerperium was normal up to the evening of the ninth day, when the woman had a sharp hemorrhage which was checked by the hot intrauterine douche. The next morning I was requested to see her, as there was a rise of temperature to 102°, this being the first rise since delivery. The size of the uterus again attracted my attention, and on examination of its interior I found a piece of placenta with a decidedly necrotic odor adherent at the left cornu. This was removed and the uterus was irrigated with bichloride solution, after which it was packed with gauze. The next day the woman had no temperature; there was no odor to the vaginal dressing, so the gauze was removed and the uterus was again washed out with bichloride solution. The woman had no further trouble.

Case IV.—This case occurred in my private practice. The woman was a multipara whom I had attended in her previous confinement. There was nothing of note about the labor, which was spontaneous. The placenta and the membranes were intact and practically delivered themselves. The course of the puerperium was absolutely afebrile. The woman was allowed to rise from her bed on the eleventh day, and on the fourteenth I called to discharge her. I then examined her and found the uterus larger than it should have been, but I laid no stress on this because this woman had always had a large uterus since I first made her acquaintance. Two days afterward, that is to say, on the sixteenth day after delivery, I was sent for in the evening because the woman had had a chill. I could not reach her until the following morning, when I was told that a neighboring physician had been called in and had pronounced the case one of malaria and had ordered large doses of quinine. Notwithstanding this medication my patient looked badly and felt decidedly so, her temperature being 101° and her pulse 120. Being skeptical about the malaria, I returned in the afternoon and carefully explored the interior of the uterus. To my great surprise I removed a large piece of membrane the size of a goose egg and a material which looked very much like placental tissue, but which was thrown away before I had a chance to investigate it. This woman was mildly septic for a few days, but then convalesced rapidly, and to day enjoys excellent health.

I could multiply other instances which I have seen of this character, but sufficient is on record to enable me to present certain conclusions which have been forced upon me and to advocate a different, or rather a somewhat more radical, method of completing the third stage of labor than is customary.

It is the accepted view to-day that, barring very exceptional instances, septic infection in the puerperal state is the result of faulty technique. The recognition of this view has to a greater extent than anything else led to betterment in our mortality and morbidity rates. It is not the antiseptic agent which is used, it is not the kind of occlusion-pad which is applied post partum, which secure for our patients the uniformly afebrile convalescences which have become the rule in hospital as well as in private practice. Without entering into unnecessary explanations, sufficient here the statement that our results are due to the recognition of the fact that the lying-in woman should not be allowed to exhaust herself in the attempt to accomplish the impossible; that is to say, we watch more carefully in order to assist Nature when she gives evidence of inability to deliver unaided, and, above all, we exercise the most scrupulous care to keep from the woman in labor those elements of infection which were responsible for the disgraceful mortality of the past. And yet, as is evidenced by the cases which I have outlined above, every now and then instances crop up where, notwithstanding all our faithful care and scrupulous cleanliness, septic infection sets in, and this, too, at a late date, when ordinarily the woman is supposed to be free from the risk of any untoward occurrence. The course of labor is conducted aseptically; the puerpera is properly cared for during the puerperium after skilled attendants have thoroughly satisfied themselves that the act of delivery has been complete, as regards the absolute emptying of the uterus. Notwithstanding all this the phenomena of septic infection set in, and that speedy and careful investigation which modern methods of obstetric practice require reveal the source of infection to be a portion of membrane, or even of placenta. How can this be avoided is the question which I propose to discuss here.

For ten years I have been contending that the act of labor should not be considered as having been completed until the uterus has been entirely cleansed of placenta and of membrane, even though these be present only in shreds. This contention has been repeatedly criticised by colleagues, and the assertion, true in the abstract, has been made that these remnants will be shed in the lochia, and rarely, if ever, do damage. My teaching, however, all along has been that, if there were a reasonable doubt as to the integrity of the membranes or placenta, the proper course to pursue was to insert the hand into the uterus, since, while freely willing to grant that these remnants might not do harm, they occasionally did—indeed, might always be the source of future damage—and that it was a far easier matter to investigate the interior of the uterus immediately after labor than to have the procedure forced upon us later in the presence of a greater or less degree of septic infection. Our duty, furthermore, does not end with the puerperal state, but concerns also the future of the woman we have confined, and her remote health too frequently is imperilled by careless obstetrics. The instances which I have related, and others of a similar nature which I have seen, lead me to even more radical action and teaching, and I bring the argument before you, a body of men who are, above all others, competetent to criticise to advantage.

It will be noticed that in the class of cases I have related there has been no reason to question the condition of the interior of the uterus until a late period after labor. As far as could be certified on very careful examination the placenta and the membranes have been properly shed in these cases, and yet, days afterward, portions of one or the other have been removed. My belief is that cases of this character are far from infrequent, and that the remnant often does not give rise to trouble until at a much later period after delivery than in those cases of which I have spoken. I question if many cases of fungous endometritis, which are diagnosticated a number of months or years after delivery, be not due to the leaving of particles of placenta or of membranes in the uterus. These particles are not shed in the lochia; they give rise to no constitutional disturbance whilst the woman remains under the care of the man who delivered her, or the disturbance is of such a slight nature as not to attract attention. In course of time an endometritis sets in which shows itself in a leucorrhœal discharge or in hemorrhages. At this late date the woman is curetted and the hyperplasia of the uterus which is found is really due or may be traced to an incomplete termination of the third stage of labor. Possibly before the woman is curetted the tubes and the ovaries and the pelvic peritoneum have become affected, and all as a sequence of a similar cause. The fact must be insisted upon that the vast majority of ills to which woman is heir are due to improper, or careless, or ignorant obstetrics. If, as far as possible, the lesions following childbirth were immediately and carefully repaired; if labor were uniformly conducted with due regard to thorough asepsis; if the third stage of labor were terminated as it should be—with a completely emptied uterus—what would there be left for the gynecologist? Very little, all must admit, and this little would depend on causes aside from the function of reproduction and its sequelæ. During the past active years in our specialties men have been too eager to become gynecologists, and too prone to neglect the far more important branch—obstetrics. Our great aim as obstetricians should be to prevent the development of the vast proportion of the diseases which sooner or later send women to us as gynecologists, and one road toward the achievement of this aim is the measure which I advocate here—the manual examination of the interior of the uterus as a routine measure after the expression or the removal of the placenta. Resort to this measure will render impossible the occurrence of cases such as those which I have pictured to you, and in so far will the woman be spared the possible sequelæ.

I have summarized above the cogent reasons which lead me to advocate this measure. The sole objection which may be offered is the fact that it is necessary to insert the hand into the parturient canal after the third stage of labor has been supposedly completed. How far this objection will hold in these days of rigid asepsis I am perfectly willing to leave to your judgment. In mine, the clean hand inserted into the uterus, under conditions when access to its interior is unimpeded, carries no risk to the woman, certainly none comparable to those to which she may be subject if the uterus has not been cleansed of all remnants.

DIABETES MELLITUS.

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During the last few years as cases of diabetes mellitus have come to me, and as I have watched those under treatment, the impression has grown that there was a seasonal variation in their occurrence and severity which is not mentioned either in text-books or monographs. I was therefore prompted to study carefully the statistics of such cases as I have records of. These amounted to fifty-five in all. About one-third of them have been under observation almost continuously for from two and a half to seven years. Most of them have been seen at least once a month, and during exacerbations two or three times a month. A few gaps of from one to six or seven months have occurred in all those longest under observation. The other two-thirds had been watched closely for from six weeks to six months. In preparing the following, Chart 1, the proportion of times that sugar has occurred in the urine to the total number of observations made on these cases in a given month has been compared. For example, in the Januarys of the last seven years sixty unrinalyses have been made on diabetics, and sugar has been found fourteen times. The relation of positive to negative results is therefore 1.4 to 6.6. Chart 1, prepared in this way, shows the correctness of my impression that there is a seasonal variation in the occurrence or recurrence of glycosuria. As will be observed on the chart, glycosuria has occurred three times as often in March and April as in January, four times as often in July, and a little more than three times as often in November. It occurs least frequently in December, January, and February. It is notably less common in May than in April or July. Its frequency of occurrence is seen to diminish during

August, September, and October, culminating in the latter month to rise abruptly in November and to fall as abruptly in December. The same facts can be stated in figures; the proportion of positive to negative observations in each month of the year is as follows:

January	1.4 to 6.6	July	6.1 to 9.0
February . . .	2.8 “ 4.2	August . . .	4 6 “ 2.4
March	4.6 “ 2.4	September . .	4.4 “ 2.6
April	4.6 “ 2 4	October . . .	3.7 “ 3.3
May.	4.0 “ 3.0	November . .	5.0 “ 2.0
June	5.2 “ 1.8	December . .	2.5 “ 4.5

CHART 1.

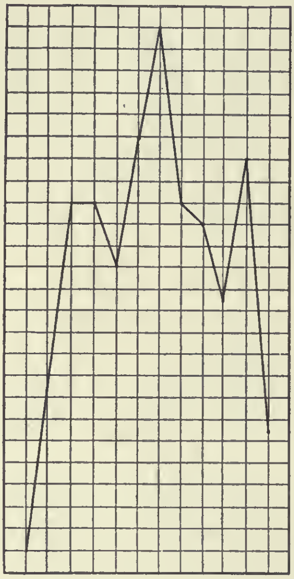


CHART 2.

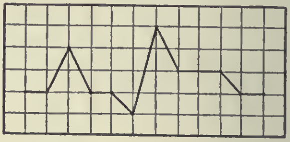


CHART 3.

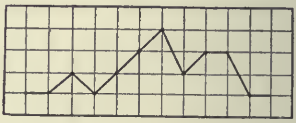


CHART 4.

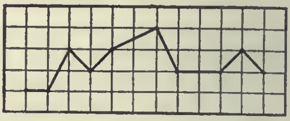


Chart 1. Relative frequency of occurrence by months in chronic diabetes; average from 55 cases.

Chart 2. Relative frequency of occurrence of glycosuria in case of S., under observation for seven years.

Chart 3. Relative frequency of occurrence of glycosuria in case of McK., under observation for four years.

Chart 4. Relative frequency of occurrence of glycosuria in case of J., under observation more than three years.

It is interesting to compare with Chart 1, which is a composite of the averages of fifty five cases, charts made in the same way of a few individual cases. Charts 2, 3, and 4 illustrate the marked similarity in seasonal variations between the three cases that I have had longest under treatment and the general average of cases as shown in Chart 1. The case which Chart 2 represents has been under observation for seven years and has been seen during that time at least once a month, except on two occasions when he was absent from home for from two to three months. Chart 2 represents a case that was under observation four years. There were six months in the middle of this period when he was not seen by me. The third case, represented by Chart 3, has been watched for three years, and during that time he has been seen at least once a month, except for two and one-half months in the third year. It will be observed that these charts correspond almost precisely with Chart 1; the increase in frequency of occurrence of sugar in the urine occurs in March or April, again most notably in July, and again, though to a less extent, in October or November. The periods of its least frequent occurrence are December, January, and May. It is interesting to note that the time of beginning of diabetes in those cases in which I could trace with probable accuracy its commencement corresponds to the periods of frequent occurrence as shown in Chart 5. It began in one-half the cases in July, in about one-fifth in April or November. The coinciding results of these statistics of individual chronic cases and of the average of fifty-five cases, and of the time of beginning of the disease in the twenty-four cases in which it could be accurately traced, are quite convincing of a seasonal variation in the severity of diabetes, at least in this locality. No hypothetical explanation of these facts that I have been able to devise is satisfactory to myself. During the last year and a half I have warned patients of the greater danger of exacerbation of their disease in March, April, July, and November, and of the need of greater dietary care at these times. The study of these fifty-five cases suggested that possibly similar results might be obtained from a study of the mortality tables of Chicago. The printed mortality reports afford the needed statistics from 1864 to 1893 inclusive. It may be interesting to note that the first recorded death from diabetes in Chicago was in January, 1864, and it was the only one that occurred in that year. Chart 5 shows the relative mortality by months during the twenty-nine years from 1864 to 1893. The same facts can be stated in figures. (Column 1, Table I.)

TABLE I.

Months.	Total mortality by months from 1864–93.	Mean temperature.	Mean barometric pressure.
January	51	24.0° F.	29.31
February	38	26.0	29.30
March	51	33.8	29.25
April	30	45.2	29.21
May	47	54.9	29.21
June	34	65.3	29.20
July	44	71.5	29.23
August	38	69.5	29.24
September	44	62.1	29.28
October	47	50.7	29.28
November	38	37.2	29.28
December	43	27.2	29.29

It will be observed at once that there is no similarity between Charts 1 and 5. In other words, that the study of recurring glycosuria in fifty-five cases does not correspond in its seasonal variations with the variations in mortality from the same disease. The mortality is higher about every other month, but averages a little higher during the winter months than at other times, though this is the season when I observed glycosuria recurring least frequently in chronic cases. During these twenty-nine years 132 deaths occurred from diabetes in Chicago during the winter months, 128 during the spring months, 116 during the summer months, and 129 during the fall months. The least number of deaths from diabetes is seen to be in the summer months, when glycosuria seems to recur the oftenest. This fact in regard to the mortality of the disease is more marked if we place together the deaths from the disease in the four coldest and bleakest months of the year, namely, December, January, February, and March. For these months there were 183 deaths, for the

CHART 5.

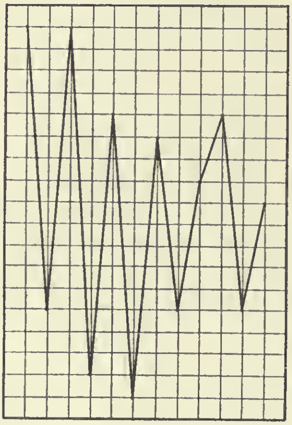


CHART 6.

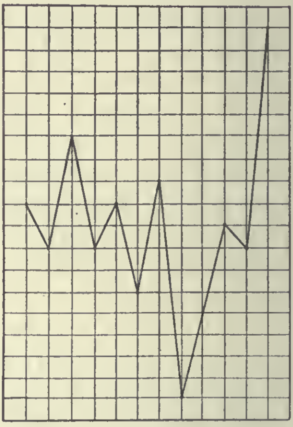
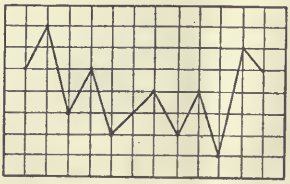


Chart 5. Relative frequency by months of deaths from diabetes during twenty-nine years in Chicago.

Chart 6. Relative frequency by months of deaths from diabetes during six years in Philadelphia.

CHART 7.



Relative frequency by months of deaths from diabetes during eleven years in Cincinnati.

four following months 155, and for the next four 167. It may be interesting, also, to compare with Chart 5 Charts 6 and 7, made from less complete statistics of mortality in Philadelphia[1] and Cincinnati.[2] The same seasonal variations are observable in these as in the chart of Chicago's mortality. Indeed, the increased mortality in the winter months is still more noticeable. The marked difference between the frequency of deaths and the exacerbations of a chronic disease like diabetes illustrates well the fact that there need be no close relationship between the two, for in diabetes, as in many other chronic ailments, death many times results from intercurrent diseases rather than from the primary one. These figures and charts correspond in a general way to the conclusions drawn by Purdy from his most thorough and interesting study of the United States census statistics of diabetes. He concludes: "The territory which furnishes the lowest mean temperature and highest altitudes also furnishes the highest mortality from diabetes."[3] If the mortality is greatest in cold regions, we might expect that it would be greatest in any given region during the coldest months, and if altitude influences mortality the barometric pressure in a given locality might. But barometric pressure in one locality varies so triflingly as undoubtedly to be of no importance. This fact is more clearly shown by comparing the mean temperature of seasons during the twenty-nine years covered by Chicago's mortality table with the mortality from diabetes during those seasons.

	Mean temperature.	Deaths.	Mean barometric. pressure.
Winter	26° F.	132	29.30
Spring	45°	128	29.22
Summer	69°	116	29.22
Autumn	50°	129	29.28

Although the variations in barometric pressure are at most only eight-hundredths of an inch, the highest pressure seems to correspond to the greatest death-rate.

It is probable that the mortality of diabetes is greatly influenced by the pulmonary complications which are a common cause of death in this affection, and therefore the mortality statistics do not correspond with the statistics of the recurrence of the disease or its variations in severity.

The following chart (8) and figures show the relative mortality of diabetes per 100,000 inhabitants in Chicago by years. It is especially interesting because of the demonstrable sudden and great increase in mortality that occurs after 1875.

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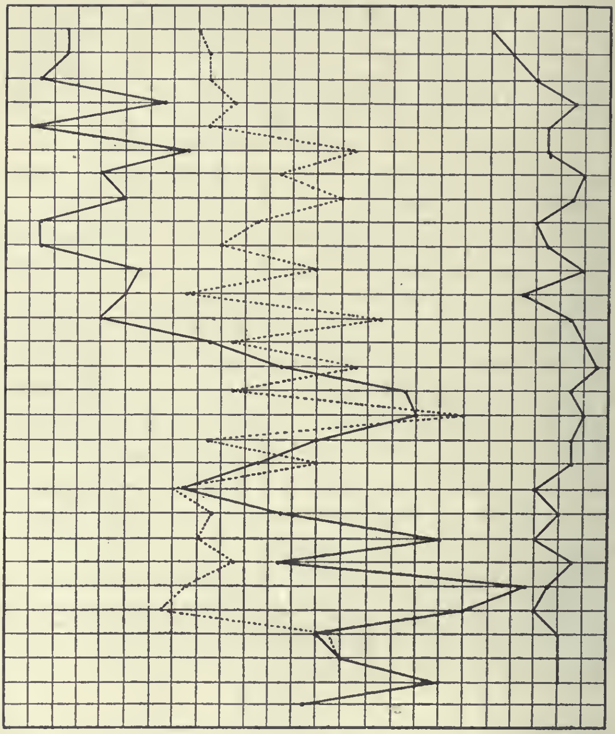
[1] From statistics of six years.

[2] From statistics of eleven years.

[3] Purdy: Diabetes. Students' and Physicians' Ready Reference Series.

CHART 8.



Relation of annual death-rate from diabetes (D) in Chicago to annual mean temperature (A) and mean midwinter temperature (W).

	Per 100,000 inhabitants.		Per 100,000 inhabitants.
In 1864 mortality was . . .	0.6	1879 mortality was . . .	3.5
1865 " " . . .	0.5	1880 " " . . .	3.6
1866 " " . . .	0.4	1881 " " . . .	2.8
1867 " " . . .	1.36	1882 " " . . .	2.3
1868 " " . . .	0.4	1883 " " . . .	1.7
1869 " " . . .	1.5	1884 " " . . .	2.5
1870 " " . . .	1.0	1885 " " . . .	4.2
1871 " " . . .	1.2	1886 " " . . .	2.5
1872 " " . . .	0.5	1887 " " . . .	4.5
1873 " " . . .	0.5	1888 " " . . .	4.0
1874 " " . . .	1.3	1889 " " . . .	2.8
1875 " " . . .	1.25	1890 " " . . .	3.0
1876 " " . . .	1.0	1891 " " . . .	3.8
1877 " " . . .	1.9	1892 " " . . .	2.9
1878 " " . . .	2.5		

From 1864 to 1875 the average mortality per 100,000 inhabitants is 0.92, and ranges from 0.5 to 1.5. From 1876 to 1892 the average is 2.8, and ranges from 1.7 to 4.5. The increases which this chart shows do not correspond to increases in population, for between 1886 and 1888 the mortality from diabetes is greatest, and the gain in population was about one-seventh. From 1884 to 1886 was the next highest mortality, and the gain in population was about one-eighth. From 1890 to 1892 was the next highest, and the gain in population was one-sixth. From 1871 to 1873 the mortality was very low, but the gain in population was about one-seventh. From 1885 to 1886 occurred the greatest fall in the mortality, and the increase in population was about one-fifteenth. From 1879 to 1883 there was a steady and considerable fall in mortality, and a gain in population of more than one-third, or by years from 1879 to 1880 about one-sixteenth, from 1880 to 1882 about one-seventh, and 1882 to 1883 about one-sixteenth. Nor does the mortality correspond to the mean annual temperatures or the mean temperature of the coldest month, as the two upper lines in Chart 8 show. The uppermost one shows the variation in mean annual temperature during the various years; the broken line the mean temperature for January in each year. It will be observed that in 1872 and 1873, when the mortality is low, that the mean annual temperature is moderate and the mean winter temperature rather low. In 1866 and 1868 the mortality is also low, but in 1865 the mean annual temperature and the mean winter temperature are both low, but in 1868 the mean annual temperature is moderate, though the mean winter temperature is low. In 1883 the rate of mortality from diabetes is low, the mean annual temperature and the mean winter temperature are low; in 1886 the mortality is also low, the mean annual temperature is moderately high, and the mean winter temperature moderate. In 1889 the mortality is also low, but the mean annual temperature and the mean winter temperature are moderately high. In 1867 the mortality is relatively high for the first eleven years represented in this chart; the mean annual temperature is moderately high, and the mean winter temperature low. In 1869 the mortality is relatively high, the mean annual temperature moderate, the mean winter temperature high. In 1879 the mortality is great, the mean annual temperature moderately high, the mean winter temperature moderately low. In 1885 the mortality is high, the mean winter temperature is low, and the mean annual temperature moderately low. The same is true of 1887. Nor does the mortality rate vary synchronously with the mean annual barometric pressure. It is evident, therefore, that there is no relationship between mortality variations and variations in mean annual or winter temperature or barometric changes. The great increase in mortality from diabetes in Chicago after 1876 cannot be accounted for by either unusually rapid increase in population or variations of mean temperature. It would be interesting if statistics were accessible to compare the annual mortality with changes in density of population—that is, number of inhabitants per square mile.

The mean mortality in Chicago from 1864 to 1892 is 2.02 per 100,000 inhabitants. According to Davidson[1] and Hirsch,[2] in Australia it is about 2, in Scotland 1, in England about 5, in Ireland about 2. In other localities these authors base their statements of mortality upon the total number of deaths rather than upon the number of inhabitants. In Norway it is said to be 2.5 per 1000 of total mortality. In Germany 1. By the United States census for 1870, 1.7; for 1880, 1.9. In England 1.25, in Ireland 0.74, in Schleswig-Holstein, 0.65, Berlin 0.94, Chemnitz 1, Frankfort-on Main 1.6, Wurzburg 1.2, Brussels 0.6. Purdy has shown that in different States in this country the mortality from diabetes per 1000 of total mortality varies from 0.55 in Alabama to 6.36 in Vermont.[3] In Illinois it is 2.11, in Iowa 2.42, in Indiana 2.72, Wisconsin 2.81, Michigan 2.68, Minnesota 1.99.

From a further study of the case records from which these statistics have been drawn several other interesting conclusions can be adduced, but they are not novel. For example, in mild cases variations in the amount of sugar in the urine in the same month are great, or it may be present or disappear and reappear several times in one month, though the patient maintains the same diet and treatment continuously. It is noticeable also that there is no relationship between the specific gravity of the urine and the percentage of sugar in it. For instance, taking figures from one case, with specific gravities of 1025 and 1028, there was a trace of sugar; with a specific gravity of 1029, none; with a specific gravity of 1030, 2 per cent.; with a specific gravity of 1035, 1 per cent.; a specific gravity of 1038, $1\frac{8}{10}$ per cent.; with a specific gravity of 1040, 1.8 per cent.; with a specific gravity of 1041, 1.5 per cent.; a specific gravity of 1043, 1.8 per cent.; a specific gravity of 1045, 1.5 per cent. In other cases a specific gravity of 1043 was accompanied by 2 per cent. of sugar; a specific gravity of 1048 by 1.5 per cent.; a specific gravity of 1038 by 2 per cent.; again, 1038 by 1 per cent., and 1030 by 2 per cent.; 1040 by 3 per cent., and 1028 by 3 per cent. The feelings of weakness and malaise, so characteristic of the diabetic state are correlated with the total amount of sugar eliminated, but very different quantities will produce similar effects in different individuals. For example, in one patient trifling weakness is noticed when 7.5 grammes are voided daily, and increases when 3.75 are voided, and is very marked when from 20 to 75 are voided daily. In another case moderate general discomfort of the characteristic kind is felt while from 7 to 10 grammes are voided, but becomes intense when from 40 to 120 are passed. In a third case equally intense symptoms accompany the passage of only 1.3 grammes daily, and are moderately severe when only 0.4 to 0.5 gramme is voided. These variations are readily understood if the fact is appreciated that an excess of sugar in the blood and urine is only one factor in the diabetic state, and that others little understood, which result from the malnutrition of the disease, are as important or perhaps more important causative factors of the general symptoms characteristic of the disease.

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[1] Davidson: Geographical Pathology.

[2] Hirsch: Handbook of Geographical and Historical Pathology.

[3] Purdy: Diabetes. Physicians' and Students' Ready Reference Series.

65 Randolph Street.

OBSERVATIONS ON THE DIAGNOSIS OF DIPHTHERIA.

A STUDY OF ITS LOCAL TREATMENT AND A FEW CASES TREATED WITH ANTITOXIN.

By Francis H. Williams, M.D.,
of Boston, Mass.

I shall assume that diphtheria is caused by the Klebs-Loeffler bacillus, and begins as a local disease. The diphtheria bacillus flourishes chiefly in the throat and is not a motile bacillus, but must be carried to the healthy individual. This is done principally by direct transferrence from mouth to mouth, or hand to mouth or nose. By mouth to mouth I mean, for example, a healthy child may catch diphtheria by biting from the same apple, putting the same toys in the mouth, using the same handkerchief as a child in whose throat diphtheria bacilli are present, or by kissing such a child; or a mother may use her own handkerchief for a neighbor's ailing child, and thus unwittingly carry the disease to her own children. The closer contact among children, and the habit they have of putting things in their mouths, show why the disease is more prevalent among them than among adults. The bacilli may get on to the hands of those who are taking care of or are about persons ill with diphtheria, and unless the hands are carefully washed may be transferred to the mouth at the next meal, on a piece of bread, for instance. Again, the bacilli may live for months in the garments of a person who has been ill with diphtheria. But I need not multiply examples as to the mode of contagion.

The bacilli, once conveyed to the mouth or nose, may remain some days, or more than a week even, without showing any sign of their presence, and in some cases may produce no symptoms of disease, although during this period such individuals may give diphtheria to others; but in the usual course of things the presence of bacilli in the throat is followed probably within a day or two by congestion, although this congestion may not be marked; and usually the tonsils, palate, or pharynx are first attacked; this congestion is sometimes accompanied by much œdema and swelling and is generally soon followed by the appearance of false membrane which may at first cover a small area only, but following the spread of the congestion may appear in new areas on each day for a few days; in other words, the mucous membrane is, as it were, planted with bacilli and the false membrane results, but the crops may not all appear at once. Most of the bacilli are found in the outer layer of this false membrane. In a word, the natural history of the disease seems to be: bacilli on a moist alkaline surface, at a temperature favorable to their growth; irritation, congestion, false membrane. This membrane may disappear from the throat before the bacilli. Therefore in the beginning and at the close of the disease an individual is especially dangerous to the community, because in the first case his diseased condition is unsuspected or thought of slight consequence, and in the second case because the normal appearance of the throat, although the bacilli may still be present, leads to the belief that the danger of contagion from him is past. The bacterial test, therefore, is of special importance in these two stages of the disease, as it is the only means of detecting the diphtheria bacilli.

In 1892 I began to employ the bacterial test for my patients, and initiated its use at the Boston City Hospital. Since the beginning of 1893 this test has been carried out without interruption in the pathological laboratory of the hospital, under the direction of Professor W. T. Councilman, and it has now been applied to a large number of cases, among them to more than five hundred of my patients. A number of bacterial examinations have also been made for my patients in the laboratory of the Harvard Medical School.

As already stated, there are two stages of diphtheria in which this test is especially serviceable.

1. Very early in the disease before the throat shows any trace of false membrane.

2. Late in the disease after the false membrane has disappeared, that is, during convalescence.

Let me illustrate the *first class* of cases by giving the history of a household in which a case of diphtheria occurred. A patient of Dr. James J. Minot, a boy of eight years, had sore-throat with membrane on a certain Sunday; bacterial examination showed on Monday evening that the bacilli of diphtheria were present. Dr. Minot then put the patient under my care. The throats of the other members of the household presented no signs of diphtheria, but it seemed to me wise to follow my rule and have swabs taken from the throats of all. They were also taken by Dr. Minot from the throats of those outside of the household who had been much with the patient. In three of the members of the household bacilli of diphtheria were found, although, as already stated, there was nothing to indicate diphtheria to the unaided eye when the swabs were taken for diagnosis. One of these three throats was carefully examined with the mirror by a laryngologist shortly after the swab was taken, and he found no sign of diphtheria. Thirty hours later there was no indication of membrane in two of these throats. Treatment with strong hydrogen-dioxide acid solution was begun on all these cases as soon as the Klebs-Loeffler bacilli were found, and in one of the adults the dioxide made conspicuous the false membrane on the right tonsil and anterior pillar, which was barely visible just before its application. No membrane was seen at any time in the throat of the second patient, a boy of two years. After three days' treatment with a strong hydrogen-dioxide solution the bacilli of diphtheria were not found in cultures from his throat. The third member of the household referred to above, the nursery maid of the first patient, had no sign of false membrane in her throat twenty-four hours after the swab was taken, but within a day or two it spread to nearly every part of the throat within sight, or which could be seen by depressing the tongue strongly. The diagnosis of diphtheria could not have been made in these cases, except by these bacterial examinations, at the stage of the disease when the swabs were taken. These four cases all recovered.

The advantages of early diagnosis, of early isolation, and early treatment are seen by contrasting the above-mentioned household with the following family:

In this family a child was taken ill with diphtheria, a few days later a second child, who died soon after at home; and at short intervals two other children, the mother, and aunt. Three children, the mother, and aunt came to the Boston City Hospital and were under my care. The children came too late to be helped, and all died. The mother and aunt were the last members of the family to show signs of the disease; they entered the hospital when they had been ill three and four days respectively, and recovered.

Such experiences show that as soon as a case of diphtheria is found in a household the bacterial test should be applied to all its members, though their throats may be normal in appearance. This would lessen the spread of the disease and give more patients the great advantage of early treatment.

In the *second class* of cases, that is, during what I may call convalescence, we frequently find that although the throat of a given patient looks perfectly well, yet it still contains bacilli, and isolation has, therefore, to be continued. The safeguard which bacterial examinations of the throats during the convalescent stage may be to the community is well illustrated by one of my patients (treated locally with corrosive sublimate, 1 to 10,000, and a ten volume solution of hydrogen-dioxide) from whose throat the false membrane had disappeared, and who had expressed a hope to be at home for the Thanksgiving festival. Formerly, discharge being determined by the inspection of the throat only, she would have been allowed to leave the hospital much before the desired date. The bacterial test, however, which was made at short intervals for some weeks after the date of the festival referred to above, showed the bacilli to be present. One shudders to think of what might have followed her contact with the children of the family, and how, originating with her, the disease might have spread to other families.

In a former paper[1] I have referred to the persistence of the bacilli in the throat for some weeks, and in one patient (treated locally with corrosive sublimate, 1 to 10,000) for nearly three months, and pointed out the necessity of making a bacterial examination of the throats of patients before isolation is terminated.

We now come to another stage of the disease, in which there are acute appearances in the throat with false membrane. In these cases the Klebs-Loeffler bacilli are usually found. We may find cases, though they are uncommon, in which one, two, or even three cultures fail to show the bacilli of diphtheria,[2] although direct examination of the membrane itself sometimes shows them to be present; further, we may have cases in which no bacilli are found in the first cultures, but subsequent trials show them to be present; and finally we may have cases in which the bacterial examination during life fails to find them, although a post-mortem examination reveals them. On the other hand, it is quite possible to mistake some other bacillus for the bacillus of diphtheria. I therefore feel called upon to repeat my statement of last year (1893), that these examinations are not infallible; but when all precautions have been carefully taken, and more than one culture made, I believe that they may usually be relied upon, except in cases where the disease is laryngeal, and that we are certainly justified in taking a much more favorable view of the recovery of a patient in whose throat the bacilli are not found than in those where they are found, although the appearances in the throat may be similar in both. To make the bacterial test special facilities and training are necessary, and experience is required to estimate its clinical value in some cases, just as experience is required to interpret the import of a little albumin in the urine.

The diphtheria cases which give a pure or nearly pure culture of the bacillus seem to be very fatal unless efficient treatment is employed, so far as one may infer from forty-seven cases, in which the mortality was 64 per cent. A local treatment which I shall describe later is, I think, especially efficient in cases where the Klebs-Loeffler bacillus only is found; nine cases giving a pure or almost pure culture of the diphtheria bacillus in which this treatment was used early all recovered.

As regards cases with false membrane, in which the diphtheria bacilli are not found: In fifty cases of what may be called pseudo-diphtheria, occurring in different years, there was a mortality of 28 per cent. As these cases were designated as pseudo-diphtheria on account of the absence from the bacterial test of the Klebs-Loeffler bacillus, we shall do well to look into this high mortality of 28 per cent., or fourteen out of fifty cases, a little more closely. These fourteen cases, in about an equal number of instances, contained either streptococci or staphylococci, or both together. 10 were laryngeal, with 7 intubations; 1 had typhoid fever; 1 scarlet fever; 1 septic, with nasal discharge; 1 had nasal discharge. Both the cases with nasal discharge were two years old and in wretched condition when they entered the hospital.

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[1] American Journal of the Medical Sciences, November, 1893.

[2] Two swabs taken from the same patient at nearly the same hour, and examined independently at different laboratories, may give opposite results.

Excluding the case of typhoid fever, there are two features which most of these fourteen cases had in common, that is, their laryngeal character and their extreme youth; the average age was three years. It seems to me that these conditions determined the fatal outcome in these cases rather than any special coccus, or, what is more probable, if we take the ground that the laryngeal cases are usually diphtheria, the Klebs-Loeffler bacilli probably escaped detection in some of them. As autopsies were not obtained, this point could not be determined.

In studying diphtheria one is struck by the large number of cases in which the larynx is involved and the high mortality among such cases. As we continue to use the bacterial test and obtain more autopsies, I think we shall find that the percentage of fatal cases of membranous throat, where the bacillus of diphtheria is absent, will be smaller; large numbers of cases of so-called pseudo-diphtheria already reported by other observers in which the mortality is very low, point to this conclusion. If the bacterial test has been carefully made, no bacilli of diphtheria found, and the larynx and nose are not involved, the prognosis of cases of membranous throats where no other disease is present, such as typhoid fever, pneumonia, measles, or scarlet-fever, is usually good. Of such cases my experience thus far has justified me in taking a hopeful view. I recall a case seen in consultation where the physician in charge had given a wholly hopeless prognosis, but the bacterial examination and the general condition of the patient led me to take an opposite view, which proved to be the correct one.

The inferences which may be drawn from suspicious cases seem to be these: First, cases which come to the hospital looking like diphtheria usually are such—that is, perhaps about nine times out of ten. The milder cases of membranous throats are not sent to the hospital in such large numbers as the severer ones, and thus the proportion of cases of diphtheria is smaller in suspicious cases if seen outside of the hospital; this has been my experience in private practice. Second, cases which look like tonsillitis, for example, usually are such, although now and then among such cases the bacilli of diphtheria are found. In practice it is well at first to regard cases which resemble diphtheria as diphtheria until careful bacterial tests have been made.

Before leaving the subject of diagnosis, allow me to remind you again of the importance of recognizing the mixed cases of diphtheria and scarlet fever; these are doubly dangerous, as they may give rise to either disease in other individuals, especially in a hospital for contagious diseases, and require special and careful isolation. In 1892, when I first saw these mixed cases, that is, found the Klebs-Loeffler bacillus *coincidently* with scarlet fever in certain patients, their presence was denied by most of those, at least in this country, who had given the question special study, but now their existence has, I think, been generally recognized.[1] Three cases of typhoid fever with membranous throats in which bacilli of diphtheria were found occurred during my service; one of these has already been referred to in a former paper of mine (AMERICAN JOURNAL OF THE MEDICAL SCIENCES, November, 1893), and Dr. John L. Morse has described a second of these cases (Isabella N.) in the *Boston City Hospital Report* for 1894. In my above-mentioned paper I also referred to the coincidence of diphtheria and measles during my service.

It is not very rare to see patients with syphilis presenting appearances in the throat similar to those found in diphtheria (of course, both diseases may occur together). If syphilitic patches occur with an acute tonsillitis or pharyngitis, the similarity to diphtheria is more striking.

Let us now consider the local treatment of diphtheria first from the laboratory, and, second, from the clinical side.

The micro-organisms dangerous above all others in the throat are the venomous bacilli of diphtheria, and an early attack upon them with a suitable application diminishes the amount of the poison and probably prevents the extension of the bacilli to less accessible parts.

A rational step to be taken in our endeavor to destroy these micro-organisms is to ascertain what germicides will find and kill them quickly, and also which of the germicides sometimes used will not do so. I say find and kill, as there are many germicides which will kill the bacilli in the laboratory, but when used in the throat simply wash the surface of the false membrane. In the plan which I adopted in the study of the action of various germicides upon the Klebs-Loeffler bacillus and several of the organisms which sometimes accompany it, I assumed that the germicide to be efficient must act quickly, as the contact in the throat between the germicide and the organisms is limited to a few seconds. It was, therefore, necessary to ascertain what would kill these organisms in five or ten seconds.

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[1] In scarlet fever it seems to me desirable to prevent the dissemination of the epithelial scales which are often shed abundantly, and to hasten the removal of this layer of epithelium in order to free the normal skin. For this purpose I have the patients rubbed all over daily—avoiding the hair—with a mixture containing seven parts of 10-volume hydrogen dioxide solution and one part of glycerin; if the patient finds this too sticky, the proportion of glycerin may be reduced. A quarter of the body may be done at a time, and some hours later another quarter, and so on. As soon as any portion of the skin is normal the application may be there dispensed with.

Second, if an agent or agents could be found to kill the organisms in five or ten seconds, the next step would be to ascertain what harmful effect, if any, they would have upon man, and to select one or more of those which could be least injurious to him; many germicides, such as corrosive sublimate, carbolic acid, the cresols, hydrochloric, nitric, phosphoric, and sulphuric acids alone and in efficient strengths are either poisonous or irritating, or both.

The third step in the investigation would be to learn how to apply efficiently a substance quickly fatal to the organisms and harmless to man, provided such a substance could be found.

Tests with various germicides were made under my direction, or by me, in the Biological Laboratory of the Massachusetts Institute of Technology upon the bacillus of diphtheria, the staphylococcus pyogenes aureus and albus, the streptococcus pyogenes and a diplococcus, and I wish to express here my appreciation of Prof. W. T. Sedgwick's kindness in permitting me to use his laboratory and my obligations to his former and present assistants, Messrs. McLauthlin, Mathews, and Keith, for carrying out many of these tests.[1]

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[1] The following outline of a test taken from a former article will show the method pursued. In any of the ordinary methods for determination of the germicidal action of any liquid disinfectant upon a given bacterial species three distinct and successive processes may usually be recognized. These are: first, the mingling for a known period of a pure culture of the given species with a suitable amount of the germicide; second, the dilution, after the desired interval has elapsed, of this mixture to the extent necessary not only to check further bactericidal action, but also to avoid the possibility of any future inhibitory effect; and third, the planting of a portion of this dilution in a suitable culture-medium, in order to permit the growth and consequent recognition of any bacteria which may have survived the action of the germicide.

As a source of the diphtheria bacillus, we used a pure culture that came originally from the laboratory of Dr. Welch, of Johns Hopkins University, or one from Dr. Prudden's laboratory, in New York, or from my own cases. From these plantings were made in bouillon, and to insure greater accuracy, in most of the experiments old and fresh bouillon cultures were used side by side, or a mixture of the two was employed.

The following record of a single action experiment with its control will serve to illustrate this method:

Five c.cm. of 50-volume dioxide solution (1/6 per cent. acid) were placed in a 60 c.cm. Erlenmeyer flask and 0.25 c.cm. added of a bouillon culture of the diphtheria bacillus. (In later tests the germicide was poured over the culture.) Ten seconds after, in order to stop the action of the dioxide, the mixture was quickly poured into a litre flask containing 600 c.cm. of slightly alkaline normal salt solution. Thirty seconds after this, the whole having been well shaken, 0.2 c.cm. was transferred to 75 c.cm. of alkaline normal salt solution in another flask. At the end of three minutes (in the latter experiments at the end of thirty seconds) 1 c.cm. of the last dilution was planted in 6 c.cm. of bouillon. At the end of four and a half minutes 1 c.cm. of the dilution was added to 6 c.cm. of melted glycerin agar at 40° C. and the mixture at once poured into a Petri dish.

In the control experiment 0.25 c.cm. of the bouillon culture of the bacillus was mixed with 600 c.cm. of alkaline normal salt solution, *then* 5 c.cm. of 50-volume dioxide solution (1/6 per cent. acid) added, and all well shaken. Thirty seconds after the addition of the dioxide 0.2 c.cm. of

All of the tests given in the following tables, besides many others, have been made in duplicate, and some have been repeated several times.

Table I.—Tests with Various Germicides upon the Klebs-Loeffler Bacillus.

Action period, 10 seconds.

Germicide.	Did not kill all.	Killed all.
Hydrochloric acid[1]	3 per cent.	4 per cent.
Nitric acid[1]	......	2 "
Sulphuric acid[1]	5 per cent.	10 "
Phosphoric acid[2]	2 "	
Boric acid	4 "	
Solution of chlorinated soda (hypochlorite of sodium) containing of available chlorine	1/2500	1/1000
Chlorine[2]	1/25,000	1/10,000
Corrosive sublimate	1/10,000 0.01 per cent.	1/5000 0.02 per cent.
Chloroform in water	1/200	
Carbolic acid[3]	5 per cent.	5 per cent.
Tricresol in 25 per cent. alcohol	......	3 "
Metacresol in water[4]	......	½ "
Paracresol in water	......	½ "

Table II.—Tests with Various Germicides upon the Staphylococus Pyogenes Aureus.

Action period, 10 seconds.

Germicide.	Did not kill all.	Killed all.
Hydrochloric acid	2 per cent.	4 per cent.
Nitric acid	½ "	2 "
Solution of chlorinated soda (hypochlorite of sodium) containing of available chlorine	1/2500	1/1000

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the mixture was transferred to 75 c.cm. of alkaline normal salt solution in another flask. After four and a half minutes a glycerin-agar plate was made as before.

After a few days' growth in the incubator, the agar plate from the control experiment showed 1600 colonies of the diphtheria bacillus. At the same time, neither the agar plate nor the bouillon tube prepared from the action experiment showed any growth.

Evidently the agar plate is of especial advantage when a part only of the bacteria are killed —*i. e.*, when the germicide is diluted just beyond its effective limit. The bouillon tube gives no precise means of distinguishing between the survival of a part and the survival of the whole of the bacteria.

[1] U. S. Pharmacopœia dilute acid contains 10 per cent. of acid.

[2] Chlorine-water contains 0.4 per cent. of chlorine, and this diluted with 99 parts of water gives 1/25000. Chlorine-water cannot be mixed with hydrogen dioxide solutions.

[3] Five per cent. carbolic acid did not always kill.

[4] I have used a solution containing ½ per cent. of metacresol and a 25-volume hydrogen dioxide acid solution in twenty-five cases of diphtheria. Objection has been made by some patients to the taste, and it seems to me to be less satisfactory than a strong hydrogen dioxide acid solution alone.

Germicide.	Did not kill all.	Killed all.
Corrosive sublimate	1/1000	
Carbolic acid	1 per cent.	2½ per cent.
Tricresol in water	1 "	1 "
Metacresol in water	¼ "	½ "
Paracresol in water	½ "	½ "
Orthocresol in water	½ "	

STAPHYLOCOCCUS PYOGENES ALBUS.

Germicide.	Did not kill all.	Killed all.
Hydrochloric acid	2 per cent.	4 per cent.

TABLE III.—TESTS WITH VARIOUS GERMICIDES UPON THE STREPTOCOCCUS PYOGENES.

Action period, 10 seconds.

Germicide.	Did not kill all.	Killed all.
Hydrochloric acid[1]	⅛ per cent.	½ per cent.
Nitric acid	......	½ "
Solution of chlorinated soda (hypochlorite of sodium) containing of available chlorine	1/2500	1/1000
Corrosive sublimate	1/10,000	1/5000
Carbolic acid	1 per cent.	5 per cent.
Metacresol in water	¼ "	½ "
Paracresol in water	¼ "	

From these tables it will be seen that, with the exception, perhaps, of solution of chlorinated soda (hypochlorite of sodium) and the cresols, there is no one germicide that is equally active against all of these organisms. In general, it may be said that the streptococcus pyogenes is the easiest to kill, the staphylococcus pyogenes aureus the most difficult. A few tests made upon the staphylococcus pyogenes albus indicate that in this respect it is similar to the aureus. A weak solution of hydrochloric acid, ½ per cent., will kill the streptococcus in ten seconds, but it takes a 4 per cent. solution to kill the Klebs-Loeffler bacillus in the same time. It takes about the same strength to kill the staphylococcus aureus and albus. The staphylococcus aureus is more resistant to corrosive sublimate than these other organisms; on the other hand, it is more susceptible to carbolic acid than they are.

It should be remembered that in the laboratory tests the micro-organisms are presented to the germicides in a liquid culture and are easily reached, whereas, clinically, they are found enveloped in a mass of pus or false membrane or other matter; hence the advantage of using the substance I am about to consider.

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[1] Two tests were made with ¼ per cent. hydrochloric acid; in one all were killed, in the other nearly all—that is, the bouillon was clear, but two colonies grew on the agar plate; on the control-plate there were 100 colonies.

To discuss the action of all the germicides I have studied during my work on diphtheria would not be feasible here, but I will devote a few words to one of them, namely, hydrogen dioxide.

The general principle in antiseptics which my studies have brought out, and which I believe to be a new one, is the advantage of mixing the stronger germicides with hydrogen dioxide, a substance which has the special property of disintegrating some kinds of dead organic matter, such as pus or certain portions of false membranes, thus rendering the bacilli more accessible, and so opening the way for the action of the stronger germicides. Pure hydrogen dioxide solutions, or rather neutral solutions, are comparatively weak germicides, but we may put with them any compatible germicides or use them alternately with an incompatible one, the choice depending upon the micro organisms we desire to kill. For instance, the mineral acids which are found in all the 10-volume hydrogen dioxide solutions sold in the market increase the germicidal value of these solutions. A 20-volume, or even a 40 volume, neutral solution of hydrogen dioxide will not kill all the streptococci in ten seconds, but a weak solution of hydrochloric or nitric acid will do so. Tests, therefore, of the germicidal value of the hydrogen dioxide solutions should always take into account the kinds and amount of free acid present.

TABLE IV.—TESTS WITH HYDROGEN DIOXIDE NEUTRAL AND ACID SOLUTIONS UPON THE KLEBS-LOEFFLER BACILLUS.

Action period, 10 *minutes*.

2½ volume containing 0.05 per cent. acid[1] did not kill all.

This is stronger in acid than a U. S. Pharmacopœia 10-volume hydrogen dioxide solution diluted with three parts of water, a strength which is frequently used by physicians.

Action period, 10 seconds.

Did not kill all.

5	volumes	containing		0.1	per cent.	acid.
10[2]	"	"		0.2	"	"
12½	"	"		0.25	"	"
25[3]	"	"		0.5	"	"

50 volumes neutral or slightly alkaline.

Action period, 5 seconds.

Killed all.

50	volumes	containing		0.17	per cent.	acid.
100	"	"	about	0.3	"	"
150	"	"		0.45	"	"
200	"	"		0.6	"	"
250	"	"		0.9	"	"

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[1] The acid was estimated as HCl with a $^1/_{100}$ normal NaOH solution and phenol phthaleïn.

[2] The U. S. Pharmacopœia solution contains not more than 0.036 per cent. of acid.

[3] Sometimes a 25-volume solution containing ⅙ per cent. acid will kill and sometimes it will not kill all.

TABLE V.—TESTS WITH HYDROGEN DIOXIDE NEUTRAL AND ACID SOLUTIONS UPON THE STAPHYLOCOCCUS PYOGENES AUREUS.

Action period, 10 seconds.

Did not kill all.

25 volumes containing	0.5 per cent. acid.
50 " "	1.1 " "
80 " "	0.26 " "

Action period, 5 seconds.

Killed all.

100 volumes containing	1 per cent. acid.
110 volumes neutral	

Staphylococcus pyogenes albus was also killed by a 100-volume hydrogen dioxide solution containing 1 per cent. acid.

TABLE VI.—TESTS WITH HYDROGEN DIOXIDE NEUTRAL AND ACID SOLUTIONS UPON THE STREPTOCOCCUS PYOGENES.

Action period, 10 seconds.

Did not kill all.

10 volumes containing	0.05 per cent. acid.
10 " "	0.10 " "
20 volumes neutral or slightly alkaline.	
40 " " " " "	

Killed all.

12½ volumes containing	0.25 per cent. acid.
50 " "	0.2 " "

Tests with hydrogen dioxide acid solutions upon a diplococcus from the throat of a patient ill with diphtheria showed that a 25-volume solution containing 0.1 per cent. of acid did not kill in ten seconds, but that a 50-volume solution containing 0.1 per cent. of acid did kill in ten seconds.

It is not assumed that these bacterial tests have the accuracy of chemical ones. I have found, nothing, however, which vitiates the general character of the deductions drawn from them: for example, first, that neutral hydrogen dioxide solutions are comparatively weak germicides; second, that the mineral acids, especially nitric acid, are stronger germicides; third, that hydrogen dioxide and hydrochloric acid together are more efficient than either alone against the Klebs-Loeffler bacillus; and fourth, that the 50-volume (0.2 per cent.) acid hydrogen dioxide is not a good germicide against the staphylococcus. (100-volume hydrogen-dioxide acid (1 per cent.) solutions are required to kill this organism in five seconds.)

I hope to discuss the more general application of tests given in this paper in another article.

I observed an interesting correspondence between the laboratory tests and clinical experience in several cases, and will recur to this point.

(To be concluded.)

THE MODERN ASPECT OF INDICANURIA,

WITH SPECIAL REFERENCE TO THE RELATION BETWEEN INDICAN AND THE ACIDITY OF THE GASTRIC JUICE.

By Charles E. Simon, B.A., M.D.,
of Baltimore.

The earliest announcement of the discovery of indigo in an animal excretion was made by Prout (*Nature and Treatment of Stomach and Urinary Affections*, third edition, London, 1840, p. 96; see also fifth edition, 1848, p. 567) in 1840.

Urines colored blue to a greater or less extent, as well as blue sediments, it is true, had been described long before Prout's days, but the nature of the coloring had not been definitely established.

The earlier literature from the times of Hippocrates and Galenus has been compiled by Martin (Heller's *Archiv*, 1846, p. 191).

Actuarius (" De Urinis," quoted by Willis, *Urinary Diseases*, p. 139) toward the end of the 13th century records an instance of slate-colored urine under the name of "Urina Veneta," and Janus Planeus (*Ibid.*, p. 131) in 1767 describes under the same title the urine of a man of sixty which deposited on standing a deep ultramarine blue sediment.

The first definite attempt at analysis of such blue coloring-matter was made by Julia Fontanelle (*Arch. Gên. de Méd.*, 1823) in 1821, the results being published in 1823. The patient, affected with an acute disease of the " urinary tract, aged eighty-two years, passed urine on the second day of the disease which was of a marked blue color, and deposited a filamentous sediment of the same color on standing.

The results of his analysis Fontanelle states as follows: The urine contained but little urea, much albumin, what he calls " gelatine," probably meaning mucus, and hydrocyanate of iron united to sodium as a triple salt, to which he refers the blue color of the urine. He admits, however that the amount of urine at his disposal was not sufficient for the purpose of a complete analysis.

Braconnot (*Journ. de Chim. Méd. de Pharm. et de Toxicol.*, 1845, vol. i. p. 569; see also *Annal. de Chim. et de Physique*, 2d series, vol. xxix. p. 252), in 1845, states that twenty years ago he had occasion to examine a urine in which a fine blue substance, looking like Prussian-blue, was suspended. This pigment he called cyanourine. In the same article Braconnot also describes a green urine, and attempts to prove the identity of the coloring-matter in this case with his cyanourine, imagining the green color to result from a mixture of the yellow color of normal urine with a small amount of the blue cyanourine.

Spangenberg (Schweigger's *Journal*, vol. xlvii. p. 487), Garnier, and Delens (*Ibid.*, vol. xxiii. p. 262; see also *Journal de Méd.*, vol. lxxii. p.

174) describe a similar pigment, which Simon (Simon's *Beiträge zur Physiol. und Pathol. Chemie und Microscopie*, Berlin, 1843, vol. i. p. 118), however, wishes to be distinguished from Braconnot's and each other.

Julia Fontanelle (*Journal de Chimie Méd.*, 1845, vol. i. p. 341) in 1845 first found Prussian-blue, or the sesqui-ferrocyanide of iron in the urine of a boy laboring under severe colic, attributed to his having swallowed a quantity of ink. The blue deposit continued for a day or two after the attack, leaving the urine a natural color, but containing some soluble cyanide, as a blue precipitate was produced upon the addition of an iron salt. Several other instances of Prussian-blue deposits have occurred, and it is remarkable that in most of these iron has been accidentally or intentionally taken. These deposits are said to be artificially produced by giving to a patient who has been taking some preparation of iron a few doses of ferrocyanide of potassium.

In the same year Velsen (*Prager Vierteljahrsch.*, vol. v. p. 109) mentions the occurrence of a dark violet urine which he observed in a man aged eighty-four years, suffering with chronic cystitis, following or associated with the taking of milk and lime-water. Unfortunately a chemical examination was not made.

In 1840 then, Prout (*loc. cit.*; see also Dr. O. Rees on the *Analysis of Blood and Urine*, London, p. 81) for the first time demonstrated the occasional occurrence of indigo in the urine. His patient was a middle-aged person of a neurotic temperament. He was in the habit of taking Seidlitz powders, and the indigo most generally appeared in the urine in the form of a dark-blue sediment, after he had taken one of these powders. On one occasion the quantity was so large that it could be collected and examined, when it was found to possess all the properties of indigo, and was obtained in a state of purity by sublimation. Prout says that he expected the blue pigment to consist of Prussian-blue.

In 1845 Heller (Heller's *Archiv für Physiol. und Pathol. Chemi. und Microscop.*, 1845, p. 161; *Ibid.*, 1844, p. 14, and 1846, pp. 19, 536, and 539) found a substance in the urine of cholera patients, and later also in normal urines, which he termed uroxanthine, and which can be broken down into a blue and a red pigment, termed uroglaucine and urrhodine respectively, both of a crystalline nature.

Martin (Heller's *Archiv*, 1846, p. 191) in 1846 further describes a blue pigment, urocyanine, in the urine in various diseases, associated with what he terms "a deficient decarbonization of the blood."

Scherer (*Annal. d. Chemie und Pharmacie*, 1846, vol. lvii. p. 180) in the same year expressed the opinion that the blue color obtained by boiling urine with muriatic acid is referable to a decomposition-product of the normal urinary pigment.

In 1847 Virchow next mentions a blue urine which he himself had observed in the case of a weakly boy, suffering with vesical pains and incontinence. Freshly voided, the urine was very pale and slightly yellow, and only deposited small blue flocculi when exposed to the air. These flocculi, microscopically examined, consisted of indigo-blue, radiant needles, which underwent no change upon micro-chemical treatment. This pigment he termed "Harnblau."

Later, in 1854, Virchow (*Arch. für Path. Anat.*, 1847, vol. i. p. 423, and vol. vi. p. 259; see also Würzburg, *Verhandl.*, vol. ii. p. 303) states that he has met with the same substance on treating the urine of an almost famished man with mineral acids.

In 1855 Hill Hassall (*Philosoph. Magaz.*, September, 1853, referred to in *Prager Viertelj. f. d. prakt. Heilk.*, 1855, vol. xlvi., *Analekten*, p. 73) describes a urine which he observed in 1852, in which, after standing for three or four days, a film had formed upon the surface, which at first presented a slate color, but later turned into a deep blue. Microscopically, this film was seen to consist of the usual "vibrios," triple-phosphate crystals, and a large number of dark or light grayish particles. Gradually this blue pigment disappeared from the urine. The extracted coloring-matter presented all the characteristics of indigo. Hassall later on repeatedly observed the same pigment in urines, obtaining the same at times in the form of a voluminous precipitate, at others in quantities only recognizable by the microscope. He imagines the indigo in the urine to result from the oxidation of a brown pigment which he observed in the same urine, and which he regarded as a derivative of hæmatine. The urines from which the indigo was obtained were mostly of a light straw color, alkaline in reaction, of a low specific gravity, and readily became turbid; none of the cases, however, were cases of Bright's disease. Its occurrence Hassall regards as pathological.

V. Sicherer (*Annal. d. Chem. und Pharm.*, 1854, vol. xc. p. 1) obtained indigo-blue from an apparently normal urine on boiling with a mineral acid. The identity of indigo-blue with the coloring-matter described as cyanourine, Sicherer thinks cannot be definitely excluded.

Virchow (*Arch. f. Path. Anat.*, vol. vi., *loc. cit.*) also expresses the view that the "Harnblau" probably never exists preformed in the urine, but that it appears after exposure to the air, in consequence of the decomposition of its mother-substance, or upon boiling with mineral acids, preferably muriatic acid, when gradually, on standing, a violet, brownish, or black sediment appears, which may or may not be crystalline. Virchow in short appears to imagine a direct relation to exist between his "Harnblau" and the blood pigment.

In 1854 Gubler observed the blue color resulting from the addition of nitric acid to albuminous urine, and thought the pigment formed to be a derivative of indigo. He found this pigment in cases of cholera, typhoid fever, smallpox, scarlatina, acute albuminuria, and especially abundant in choleriform diarrhœa and cholera Asiatica, and also taught that prognostic conclusions could be drawn from the intensity of the reaction. (See Schmidt's *Jahresb.*, 1859.)

Thus stood matters in 1857, when Schunck (*Mem. of Lit. and Phil. Soc. of Manchester*, vol. xiv. p. 239; *Phil. Mag. and Journal of Sc.*, 4th series, vol. xiv. p. 288. See also *Chem. Cbl.*, 1857, p. 957, and *Jahresb. d. Chem.*, 1855, p. 659; 1857, p. 564; 1858, p. 465) demonstrated the constant presence of a substance in the urine which yields indigo-blue on boiling with mineral acids or when undergoing a certain decomposition upon exposure to the air. This substance he called indican, and thought the same to be identical with vegetable indican, obtained from certain plants, such as the indigofera tinctoria, isatis tinctoria, etc.

Since that time blue urines and blue sediments have been repeatedly observed.

Wyss (*Arch. f. Heilkunde*, 1863, vol. ix. p. 235) thus describes the occurrence of a dark brownish-violet color in urine voided immediately after an attack of cholera, after having stood exposed to the air until ammoniacal decomposition had set in. The same result was obtained on boiling such urines with mineral acids, which fact had been already demonstrated for almost any urine to a greater or less extent by Heller in 1844, as set forth above, and by Middledorpf (Günzburg's *Ztschf. f. klin. Med.*, 1852, p. 65) in 1849.

Frerichs (*Die Bright's che Nierenkrankheit*, 1851, p. 191), Begghby (*Monthly Journal*, October, 1852, cit. by Güterbock in *Der Deutsch. Klinik*, 1852), Güterbock (*Deutsch. Klinik*, 1853), Buhl (*Ztsch. f. rationelle Med.*, N. F., 1855, vol. vi. p. 1), Gubler (*Gaz. Méd. de Paris*, December, 1854), Lindsay and Osborne (*Medical Times and Gazette*, March, 1855, cited by Thudichum, *Ninth Report of the Medical Officer of the Privy Council*, 1866, London, 1867, p. 468), Thudichum (*l. c.*), and Lehman ("Chem. und physik. Studien über die Cholera," Dissertation, Zürich, 1857) had made the same observations in choleraic urines.

Brudeberger (Virchow's *Archiv*, vol. xxxviii. p. 310) claimed to have demonstrated the presence of biliary coloring-matter in cholera urine, by treating the same with nitric acid, a fact which was doubted, however, by Buhl (*l. c.*) and Frerichs (*l. c.*); and Gubler (*Gaz. des Hôp.*, 1866, No. 104, p. 410) expresses the opinion directly that the color-play referred to must be referable to indigo. Thudichum (*l. c.*) finds that on boiling cholera urine with mineral acids a certain substance is split up into a blue and a red pigment, choleraic urorubine, and choleraic urocyanine, calling the mother-substance choleraic urocyaninogen. In other words, Thudichum here expresses under different names a fact which had already been established by Heller twenty-two years before, and, like Heller, he did not recognize the identity of his choleraic urocyanine (Heller's uroglaucin) with indigo. Wyss (*l. c.*) also demonstrated the incorrectness of Brudeberger's observations, and succeeded in definitely demonstrating the true nature of the blue coloring-matter obtained from cholera urine, recognizing this to be indigo, derived from the indican of Schunck.

While Wyss had thus established the identity of Thudichum's choleraic urocyaninogen with indican, and that of choleraic urocyanine with indigo, Kletzinsky (*Wiener med. Woch.*, 1859, No. 27, cited by Thudichum in his *Pathology of Urine*, p. 326) had done the same with Heller's uroglaucin, also proving the identity of Heller's urrhodine with the indigo red of Berzelius, and Schunk that of Heller's uroxanthine with indican.

In 1858 and 1859 Carter (*Edinburgh Med. Journal*, July, 1858, p. 86, vol. iv., part 1, and 1859, vol. v. p. 119) succeeded in establishing the constant presence of indican in health as well as in disease, having examined the urines of 300 persons in this direction.

He fully coincides with Heller in regarding indican as a physiological and constant constituent of human urine.

The reason why Hassall regarded indican as a pathological constituent of the urine, Carter refers to the putrefactive method employed by the former.

Schunck established the presence of indican in 39 out of 40 normal urines.

From this period on the occurrence of blue urines and blue sediments need not occupy our attention any longer, and it will suffice to append here a short *résumé* of the literature upon the subject up to date.

Gilchrist (*Edinburgh Med. Journal*, 1862; see also *Allgem. Med. Central Ztg.*, 1862, and *Prager Viertelj. f. d. prakt. Heilk.*, 1863, vol. lxxvii., *Analekt*, p. 14) in 1862 cites the case of a woman, aged fifty-eight years, suffering with rheumatism for many years; her urine was of a dark greenish-yellow color, ammoniacal, and deposited a bluish-green sediment consisting of triple phosphates, epithelial cells, and amorphous yellowish-brown, and light and dark blue particles. This pigment Gilchrist regards as indigo-blue. He also refers to a case of indigosuria recorded by Beale.

Beneke (*Pathol. d. Stoffwechsels*, Berlin, 1874, p. 185) in 1874 mentions a blue urine that was passed by a case of chronic Bright's disease associated with general anasarca, the blue color however only appearing on certain days.

Beneke also refers to one case of indigosuria in which the blue coloring-matter was recognized as indigo by Debuque (cited by S. Parkes: *The Composition of the Urine*, London, 1860, p. 197).

A very interesting case was reported in 1888 by Kahler (*Prager med. Woch.*, 1888, p. 543), who observed in the urine of a patient, aged seventy-six years, the subject of a unilateral pyonephrosis (pyelitis) of many years' standing, the formation of a bluish-red film on the surface, with a sediment that was full of blue coloring-matter, the walls of the vessel being likewise covered with the same. The urine was ammoniacal, and emitted a mild odor of sulphuretted hydrogen. The blue coloring-matter in the sediment occurred in both amorphous and crystalline form, and was recognized as indigo. The indigosuria in this case always appeared paroxysmally, and was accompanied by hydrothionuria. That hydrothionuria is the result of bacterial activity was shown by Müller (*Berliner klin. Woch.*, 1887, Nos. 23 and 24), and the simultaneous occurrence of indigo and sulphuretted hydrogen would make it appear very probable that the former arises under the same or similar conditions as the latter, a supposition which is very strongly supported by the observations of Alvarez (*Comptes rend. d. l'Académie des Sciences*, 1887, vol. cv. p. 286). The indican in this case was never found to be increased, but rather diminished, in quantity.

A similar case was observed by V. Udránszky and published by Plosz (*Zeitsch. f. physiol. Chemie*, vol. vi. p. 504, and vol. viii. p. 86), in which the urine was ammoniacal, and contained free indigo and sulphuretted hydrogen, the case being one of ulcerative cystitis with pyelitis and nephritis. A red pigment was also noticed in crystalline form, the chromogen of which is frequently associated with indican in normal and pathological urines. In Kahler's case there were no red crystals observed, but a red pigment could be extracted, which Kahler thinks identical with that obtained by Udránszky and Plosz.

In 1880 Litten (*Central. f. d. Med. Wiss.*, 1880, p. 823) reported a case of infiltrating carcinoma of the liver with simple round ulcers of the stomach, in which death resulted from gastro-intestinal hemorrhage. The urine at first was icteric, but later became a dark blue violet, without doubt referable to indican.

Ultzmann ("Neuropathien des männlicken Harn und Geschlechtsapparates;" *Wiener Klinik*, 1879, p. 120. "Harnconcretionen des Menschen und die Ursachen ihrer Entstehung." Wien, 1882) observed a violet-colored urine with markedly blue sediments in a fatal case of peritonitis; he furthermore mentions the case of a tabetic with vesical paresis, in which blue sediments were seen for a long time and suddenly disappeared; the same patient suffered with temporary glycosuria without other diabetic symptoms. The same observer also states that urates, especially the ammonium urate, are very apt to carry down indigo and appear blue or violet colored, and that indigo is not infrequently found in traces, at least, in urinary calculi. Concretions containing a larger amount of indigo, however, and which might properly be called indigo calculi, are of decided rarity. In the literature, as far as I have been able to find, only two cases of indigo calculi have been reported. Ord (*Trans. Path. Soc. of London*, 1878, vol. xxix. p. 155) thus records an instance in which a stone obtained from the pelvis of the right kidney weighed 2.6 grammes, consisting of coagulated blood, and phosphates, but to the greatest extent of indigo. The left kidney in this case was the seat of a round-celled sarcoma which also occluded the left ureter, producing dilatation of the pelvis and calices, which were filled with pus and a branching phosphatic calculus.

The second case of this kind was reported by Chiari (*Prager med. Woch.*, 1888, p. 541), where concretions were discovered in both kidneys, consisting to a large extent of indigo, with an albuminous basis and a small amount of phosphates. The patient, a female of thirty-four years, had had attacks of renal colic for five years off and on, and in the urine pus and smaller concretions had been repeatedly observed.

Ord (*l. c.*) explained his case by assuming that the formation of pus in the left kidney and the retention of decomposing pus constituted the source of increased indol-formation, resulting in an increased elimination of indican by the right kidney, where, coming into contact with the acid urine in the healthy right kidney-pelvis, indigo would be set free, leading to the formation of a stone.

Chiari also looked upon the bilateral suppurative pyelitis as the *primum mobile*, but regards the setting free of indigo as the result of microbic activity upon the indican.

A blue urine was further reported by A. Robin (*Compt. rend. de la soc. de Biol.*, 1875) in 1875, coming from a case of hysteria. The blue pigment in this case Robin, upon chemical examination, regards as identical with Braconnet's cyanourine, and definitely denies its identity with indigo.

V. Jaksch (*Diagnostik*) states that indigo was found to be present in remarkable abundance during the process of ammoniacal fermentation in the urine of jaundice, from a patient with hypertrophic cirrhosis of the liver. Numerous indigo-crystals, of which v. Jaksch gives an excellent representation, were also found by him in a case of hepatic abscess, in the sediment of the urine.

I myself have not infrequently observed the presence of indigo in the urine, often coloring epithelial cells and leucocytes, in cases of chronic interstitial nephritis, while in decomposing urines traces at least can be found in almost every specimen. It has thus been seen that blue urines and blue sediments have been known to occur since time immemorial, and that any urine when treated with mineral acids will permit of the extraction of a blue coloring-matter, which has received different names by different observers, viz., Prussian-blue, urocyanine, cyanourine, harnblau, uroglaucine, choleraic-urocyanine, and which upon more detailed examination has been definitely demonstrated to be indigo-blue, being one of the products of decomposition and oxidation of a colorless mother-substance, present in every urine to a greater or less extent, which had been named indican by Schunck, its discoverer, and which has been shown to be identical with the uroxanthine of Heller and Thudichum's choleraic-urocyaninogen.

The experiments of Schunk were fully confirmed by Hoppe-Seyler (Virchow's *Archiv*, 1863, vol. xxvii. pp. 388–392) in 1863, who demonstrated the constant presence of indican in over a hundred human urines, and also in such of carnivora and herbivora. Its formation Hoppe-Seyler regards as a probable function of the kidneys, since in his examinations of the spleen, liver, pancreas, muscles, blood, and kidneys traces were only found in the latter organs.

The same observer also mentions the occurrence of a large amount of indican in a brown urine obtained from an individual afflicted with a melanotic carcinoma of the orbit.

While Schunck, however, regards indican as a glucoside and as identical with vegetable indican, a view against which Hoppe-Seyler had already spoken, Baumann was the first to demonstrate that no sugar is formed in the process of decomposition of animal indican, but sulphuric acid and a compound belonging to the indigo-group, which had been previously found as one of its products of decomposition by Nencki (Baumann: *Ber. der Deutsch. chem. Gesellsch.*, vol. ix. p. 54; Pflueger's *Archiv*, vol. xiii. p. 307; *Zeitsch. für physiol. Chemie*, vol. i. p. 60); and in 1879 Baumann, in conjunction with Brieger (*Zeitsch. für physiol. Chemie*, vol. iii. p. 254; *Ber. der Deutsch. chem. Gesellsch.*, vol. xii. p. 2166) and Thiemann (*Ber. der Deutsch. chem. Gesellsch.*, vol. xii. p. 1098; *Ibid.*, p. 1192; *Ibid.*, vol. xiii. p. 408), was able to demonstrate that urinary indican is a combination of the conjugate sulphate of a hydroxylated indol with an alkali, which they termed indoxyl-sulphate, the term indican to be restricted to the indigo-yielding substance of plants, viz., Isatis tinctoria, etc.

In the meantime indol had been shown to be the mother-substance of the indigo-group by Baeyer. Kuehne (Virchow's *Archiv*, vol. 39) had found a substance among the ultimate products of albuminous digestion by means of pancreatic juice, which he regarded as indol, and Radziewsky (Dubois-Reichert's *Archiv*, 1870, Heft i.) showed indol to be a normal and constant constituent of the feces, to which in part the disagreeable odor of the latter is due, so that it was not unnatural for Jaffe (Pflueger's *Archiv*, vol. iii. p. 448) to express the idea that the indol formed in the intestines should be regarded as the source of the urinary indican and the indigo obtained therefrom.

The proof for this view was brought forth by the experiments of Masson ("Des matières colorantes au point de vue physiologique;" Dissertation, Berne, 1874) in 1874, who, working under Nencki, found that the elimination of indican is increased in rabbits after subcutaneous injections of indol, an observation which was confirmed later on by Jaffe, and not originally made by him, as is usually stated.

The question now naturally arises, How is indol produced? and it is Nencki especially (*Ber. der Deutsch. chem. Gesellsch.*, vol. ix. p. 1593) to whom we are indebted for the solution of this problem. In 1874 he found indol to be a normal product of intestinal digestion, and expressed the view that its formation was the result of bacterial activity.

Koukol-Yasnopolsky (Pflueger's *Archiv*, vol. xii. p. 78) confirmed Nencki's work and found indol to be a constant product of albuminous putrefaction in alkaline media.

In a later communication Nencki (*Ber. der Deutsch. chem. Gesellsch.*, vol. ix. p. 299) definitely declares indol to be a specific product of albuminous putrefaction in the presence of organized ferments, in accordance with which Kuehne and Huefner find that no indol is formed when albuminous material is digested with pancreatic ferments in the absence of putrefactive processes.

Salkowsky (*Ber. der Deutsch. chem. Gesellsch.*, vol. ix. p. 408), on the strength of experiments made by Hoppe-Seyler and his pupils (Tuebinger, *Med. Chem. Untersuchungen*, vol. iv.; Pflueger's *Archiv*, vol. xii. p. 1), in which the formation of indol was observed from albuminous material kept under ether, thinks that the non-organized ferments, as well as the organized, are capable of causing the formation of indol, and that the intestinal tract is hence not the only source of the indican of urine, but that the body-tissues must be regarded as a second source of its formation.

That the experiment of Hoppe-Seyler, referred to, and hence the views of Salkowsky are erroneous, the former being probably referable to some technical errors, is proved by the following facts: According to Senator (*Zeitsch. für physiol. Chemie*, vol. iv., 1880), indican does not occur in the urine of newly born infants which have not as yet received nourishment, a point strongly in favor of Nencki's teachings, putrefiable substances being present, but no putrefactive organism, an observation moreover with which the chemical composition of meconium stands in perfect accord.

Tuczek's (*Neurologisches Cbl.*, 1884, p. 307; *Arch. für Psych. und Nervenkrankh.*, vol. xv. Heft 3) observations on abstinence in cases of insanity, where indican was only then observed in the urine, when albumin, even in minimal amounts, was ingested, but was otherwise absent, also speaks strongly against Salkowsky.

There should also be mentioned a case of Dr. Rabbas, reported by Mueller: A patient, who had been twelve days without food, eliminated only 0.000345 per cent. of indican, spectroscopically determined, the ordinary method showing no indican whatsoever.

The fact that high fever is not necessarily accompanied by an increased degree of indicanuria, as pointed out by Jaffe already, is also an important factor against Salkowsky's views. Salkowsky, it is true, was unable to confirm the absence of indican from the urine of dogs at least, finding an elimination of $\frac{4}{5}$ mgrm. from the second to the fifth day of starvation, as compared with 17 mgrms. per diem while being fed with meat. (*Ber. der Deutsch. chem. Gesellsch.*, vol. xii. p. 138.)

Von den Velden likewise observed that in a dog which had been without food for five or six days at a time the conjugate sulphates had only diminished to one-half. Jaffe (*loc. cit.*) cites a case of complete occlusion of the œsophagus, owing to the presence of a carcinoma, in which no nourishment had been taken for eight days preceding death, and in which 17 mgrms. of indigo were demonstrated nevertheless on the day of death. As far as the latter case is concerned, a possible source for the indol-production could be sought for in the process of necrosis of the carcinomatous material, a point which Jaffe did not exclude.

For an explanation of Salkowsky's cases it is not necessary to refer the production of indol during starvation to a decomposition of pancreatic tissue, referable to the activity of micro-organisms located in the pancreas, according to Tiegel and Billroth (Virchow's *Archiv*, vol. lx. p. 453), and as suggested by Weiss (Ibid., vol. lxx. p. 80), but a very much more probable source for the production of indol in these conditions we find in the so-called "Hungerkoth," secreted by the intestinal mucous membrane, according to Voit, to the amount of 0.66–6.4 grammes residue, with 5.04–7.96 per cent. of nitrogen. The question may, however, still be asked, Why is it that Salkowsky was able to demonstrate indican in the urine of starving dogs, while in starving man no indican has been observed? An explanation of this apparent incongruity may be found in the experiments of Mueller (*loc. cit.*), which appear to indicate quite conclusively that the conditions in man and animals cannot be alike during hunger.

The final blow, however, which Salkowsky's theories received came from Baumann, who succeeded in absolutely disinfecting the intestinal tract in a dog by means of large doses of calomel, when all traces of indican, and for that matter of phenol and paracresol, dissappeared from the urine. The more recent experiments from Baumann's laboratory finally fully confirm the view that indol in health and disease is only formed in the intestines, provided that resorption of decomposing pus is not taking place in any part of the body, in which case a second source of indol and a corresponding indican-formation would exist.

What has thus been shown to be true for indol, viz., indican, is likewise true for phenol and paracresol, etc.; in other words, for all the known conjugate sulphates occurring in the urine, so that the degree of intestinal putrefaction may be directly measured by the elimination of these bodies in the urine. Any factor, then, that will bring about an increased degree of intestinal putrefaction will at the same time call forth an increased elimination of conjugate sulphates.

The question now naturally suggests itself: What is it that keeps the degree of intestinal putrefaction in what may be considered as the physiological limits?

There appears to be but little doubt at the present time that the free hydrochloric acid of the gastric juice is the active agent in this direction.

The Abbé Spalanzani, already (*Experiences sur la digestion.* Trans. by Senebier, new edition, Genève, 1784, pp. 94, 97, 145, 320–330, cit. by Bunge in his *Physiol. und pathol. Chemie*, 1889, 2d ed.; German translation, also, Leipzig, 1875), more than one hundred years ago, had observed antifermentative properties in the gastric juice. Small pieces of meat, covered with gastric juice, resisted putrefaction for days, while such as were left exposed to the air, when only covered with water, very soon emitted a most offensive odor. Spalanzani similarly observed a snake that had swallowed a lizard, and upon opening the stomach of the same sixteen days later the lizard, of course, was found partly digested, but manifesting no odor that could possibly be referred to putrefactive processes. A truly germicidal action on the part of the gastric juice was likewise observed by Spalanzani, for when he introduced meat already undergoing the process of putrefaction into the stomach of certain animals, this meat very soon had lost its putrefactive properties.

That the gastric juice thus possesses very marked antiseptic and germicidal properties is thus very apparent, and, remembering the fact that the mineral acids must be reckoned among the most powerful antiseptics, the supposition that the antiseptic properties of the gastric juice are referable to the presence of free hydrochloric acid appears very justifiable.

Sieber, working under Nencki (*Journ. für prakt. Chemie,* 1879, vol. xix. p. 433), showed, as a matter of fact, that when 50 grammes of hashed meat were exposed to the open air, with 300 c.cm. of 0.1 per cent. of hydrochloric acid, cocci and bacteria were observed in small numbers only after twenty-four hours, while with 0.25 per cent. a few quiescent organisms were only observed on the seventh day, and with 0.5 per cent. there was no sign whatsoever of putrefaction on the seventh day.

Micquel arrived at similar results (*Cbl. für allgemeine, Gesundheitspflege,* 1884, vol. ii. p. 403), finding that 0.2–0.3 gramme of a mineral acid suffices for the purpose of preventing putrefaction in 100 c.cm. of bouillon.

Schmidt (Bidder und Schmidt, *Die Verdaungssaefte und der Stoffwechsel, Mitau,* Leipzig, 1852, pp. 44, 45) determined the amount of free hydrochloric acid in the gastric juice of the dog as 0.25–0.42 per cent., with 0.33 as an average.

Dionys Szabo in Hoppe-Seyler's laboratory (*Zeitsch. für physiol.*

Chemie, 1877, vol. i. p. 155) found 0.3 per cent. in man. In other words, we find a degree of acidity in the gastric juice referable to free hydrochloric acid that has been shown to be necessary for the prevention of putrefactive processes.

Bunge (*Phys. und path. Chem.*, 2te Aufl., 1889) strongly advocates this function of the stomach, and in fact regards it as its most important one.

Granting the correctness of this hypothesis, an increased degree of intestinal putrefaction (a certain degree will, of course, exist in consequence of the development of certain spores that have not been destroyed by the action of the gastric juice) should of course result whenever the acidity of the gastric juice falls below a certain level or is entirely annihilated. Such has actually been found to be the case.

Kast ("Ueber die quantitative Bemessung der antiseptischen Leistung des Magensaftes." Festsch. zur Eroeffnung des neuen allgem. Krankenhauses, Hamburg, 1889, ref. to in Maly's *Jahresb.*, 1889, p. 271) working in Baumann's laboratory was able to demonstrate a largely increased elimination of conjugate sulphates, following the neutralization of the acid gastric juice with large doses of bicarbonate of sodium, as is evident from the following tables:

1. NORMAL DAYS.[1]

C.CM.	H_2SO_4 in 50 c.cm. as $NaSO_4$.		In 24 hours as $NaSO_4$.		
	A.	B.	A.	B.	A : B.
1500	0.1545	0.0100	4.635	0.3	15.4
1700	0.1140	0.0110	3.960	0.374	10.3
1800	0.1100	0.0668	3.960	0.244	16.1
1700	0.1045	0.0085	3.553	0.289	12.5

2. FROM NOW OFF 13 GRMS. OF BICARBONATE OF SODIUM DAILY.

C.CM.	H_2SO_4 in 50 c.cm. as $NaSO_4$		In 24 hours as $NaSO_4$.		
	A.	B.	A.	B.	A : B.
2000	0.0810	0.0213	3.240	0.852	3.8
1900	0.0667	0.0138	2.534	0.524	4 8
2100	0.0567	0.0195	2.381	0.819	2.9
1820	0.1450	0.0225	5.221	0.846	6.1

To these experiments of Kast, v. Noorden (*Zeitsch. für klinische Med.*, vol. xvii.) objected upon the grounds that in the experiments of Kast abnormal conditions had been established in consequence of the introduction of large amounts of alkalies, a much more favorable basis for the development and resorption of putrefactive products, viz., for the formation of conjugate sulphates, being thereby given than is usually to be found in the mere absence of free hydrochloric acid, basing his conclusions upon experiments made in a series of patients where, in the absence of free hydrochloric acid, but with a normal motility of the stomach, a decided increase in the elimination of conjugate sulphates was not observed, the relation of A : B in his cases being the following:

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[1] "A" indicates the amount of mineral sulphates; "B" that of the conjugate sulphates.

	1	2	3	4	5	6	7	8
A : B . .	17.9	12.4	7.6	13.8	5.1	10.5	4.8	11.2

An observation furthermore has been made by Boas (*Deutsch. med. Woch.*, 1891, No. 28) in a case of duodenal stenosis, in which succus entericus was constantly present in the stomach; where gastric juice could thus be definitely excluded; where the relation of A : B was found to vary between 21.9 and 5.36.

The experiments of Mester, however (Inaugural Diss., 1893, and *Zeitsch. für klinische Med.*, vol. xxiv. pp. 441–457), in which the objectionable features of those of Kast were eliminated gave rise to the same conclusion. Mester's conclusions may be summarized as follows: Intestinal putrefaction is brought about normally by the entrance of putrefactive organisms into the digestive tract together with the food, the intensity of the same depending upon the amount of free hydrochloric acid present. It is thus increased in the absence of free hydrochloric acid, which becomes the more evident when putrid meat, less so, when meat carrying but a small number of putrefactive organisms, serves as nourishment, while with a normal amount of free hydrochloric acid, even within wide limits, such differences in the quality of the food remain without influence upon the process of digestion.

Equally suggestive were the observations of Wasbutzki (*Arch. für. exp. Path. und Pharmak.*, vol. xxvi.), the result of which is the following: In cases of intense bacterial fermentation in the stomach an increased elimination of conjugate sulphates results, the cases being such of subacidity or anacidity of the gastric juice; a diminished elimination of conjugate sulphates, on the other hand, was noted in cases of torular fermentation, *i. e.*, such in which hyperacidity and even hypersecretion existed. Two interesting exceptions to this general rule are recorded by Wasbutzki, in both of which a normal and even a diminished elimination of conjugate sulphates was found, associated with anacidity and a simultaneous occurrence of fermentative processes. In both cases much lactic acid and butyric acid were found, and Wasbutzki expresses the opinion that the abnormal quantities of acid in these cases were able to carry on the functions of the free hydrochloric acid, an observation which I have been able to confirm in several cases, and an explanation with which I am inclined to agree.

The cases of Biernacki (*Deutsches Arch. für klin. Med.*, vol. lxix.), finally, in which an increased degree of intestinal putrefaction was found to be associated with a deficiency in the amount of free hydrochloric acid in cases of chronic Bright's disease, likewise support the view that the elimination of conjugate sulphates must be regarded not only as an index of the degree of intestinal putrefaction, but also of the acidity of the gastric juice, or rather of the amount of free acid contained in the same.

Unfortunately, however, it will probably be but very rarely that a quantitative estimation of the total and conjugate sulphates can be carried out by the practising physician, one single determination requiring at least from five to six hours of time, the use of delicate scales, etc.

The question, hence, naturally suggested itself: Does the amount of free hydrochloric acid in the gastric juice affect the indol-producing organisms in exactly the same manner as the phenol-producers, for example? In other words, is an increased elimination of indican from the urine, referable to subacidity or anacidity of the gastric juice, invariably associated with a similar increase of the phenol sulphate—for the others, occurring in mere traces, need not be considered at all in this connection—or are there cases in which increased or diminished indicanuria is associated with diminished or increased phenoluria respectively?

Were an increased elimination of indican invariably associated with an increased elimination of phenol, and a diminished elimination of indican with a diminished elimination of phenol, it is apparent that in that case a quantitative estimation of either would be sufficient for the purpose of deciding the question whether hyperacidity, a normal acidity, subacidity, or anacidity of the gastric juice exists.

While formerly Salkowsky (*Virchow's Archiv*, vol. lxxiii. p. 409) taught that urines rich in indican were at the same time also rich in phenol, there seems to be some doubt as to the correctness of this view, according to Brieger (*Zeitsch. für physiol. Chemie*, vol. ii. p. 256), and the following cases taken from Brieger may serve as an illustration:

Case IX.—R., aged fifty-four years, suffered for ten years from chronic gastritis (loss of appetite, nausea without vomiting) and anæmia of considerable severity; without the existence of a true cachexia, however; in the beginning bromine-water only occasioned a slight turbidity in the distillate of the urine, while later on, when the patient had improved, his appetite having returned, 0.0223 gramme of tribromophenol, equivalent to 0.0061 gramme of phenol, was obtained from the urine of twenty-four hours. A considerable amount of indican was, however, present.

The same may be said of Case X., also the subject of chronic gastritis, in which only traces of phenol were found.

In Case XI., associated with increased indicanuria, 0.0030 gramme of phenol was found, the case being one of ulcer of the stomach.

In Case XII., also one of ulcer, the amount of phenol varied from 0.0152 to 0.0135 gramme.

Increased indicanuria, associated with an amount of phenol varying from 0.0174 to 0.0337 in one case of cancer of the stomach, and 0.0344 to 0.1130 gramme in another, was likewise observed (Cases XIII. and XIV.).

Later on it appears that Salkowsky himself changed his opinion, so that it may now be regarded as a settled point that increased indicanuria is not necessarily accompanied by increased phenoluria.

The question now suggested itself: Does a diminished elimination of indican in digestive diseases ever accompany an increased elimination of phenol?

This question, as far as my own experiments go, I think I can definitely answer in the negative, for not in a single case in which I was able to demonstrate a diminished elimination of indican have I been able to determine the existence of increased phenoluria, excepting cases in which an active resorption of decomposing pus was taking place from any of the large body-cavities.

An increased phenoluria, on the other hand, not infrequently accompanies an increased indicanuria, and this is especially the case in cases of cancer of the stomach, and also quite constantly observed in cases of general peritonitis and ileus, but of these conditions it is not at present my object to speak.

Having thus determined the fact that an increased elimination of indican may or may not be accompanied by an increased elimination of phenol in digestive diseases, and that a diminished elimination of indican under the same conditions is not accompanied by an increased elimination of phenol, the conclusion that the increased degree of intestinal putrefaction in cases of subacidity and anacidity of the gastric juice is largely due to an increased formation of indol, and that *the indican elimination may hence be regarded as running a course parallel to the degree of antiseptic—viz., germicidal—activity of the gastric juice*, i. e., *the amount of free hydrochloric acid, appears to suggest itself.*

The correctness of this view I have been able to test in a very large number of instances that have fallen under my observation in the course of the last three years.

The gastric juice, it is true, could not be examined in every individual case; the records of those, however, in which this was done and the histories of the others, I think, will be fully convincing, and call for a repetition of my experiments, leading, I hope, to the general adoption of the hypothesis herein set forth, and the general acceptance in practice of so simple a method to obtain an insight into the condition of the gastric juice and the degree of intestinal putrefaction.

I do not wish to convey the impression, however, that with the adoption of this method the use of the gastric tube for diagnostic purposes should be abandoned. From a careful analysis of the urine, it is true, many points of undoubted value can be obtained regarding the condition of stomach and small intestine, etc., but nevertheless the information thus obtained cannot as yet be so complete as that furnished by a direct examination of the stomach contents. *As confirmatory evidence, however, and as a method to be employed where for any reason the use of the tube is either contraindicated or impractical, the same, I am sure, will be found to be of decided value.*

(To be continued.)

NEURALGIA OF THE RIGHT TRIGEMINAL NERVE OF EIGHT YEARS' DURATION;

EXCISION OF THE THREE DIVISIONS AT THE GASSERIAN GANGLION; RECOVERY, WITH PARTIAL DESTRUCTION OF THE GANGLION.

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AND

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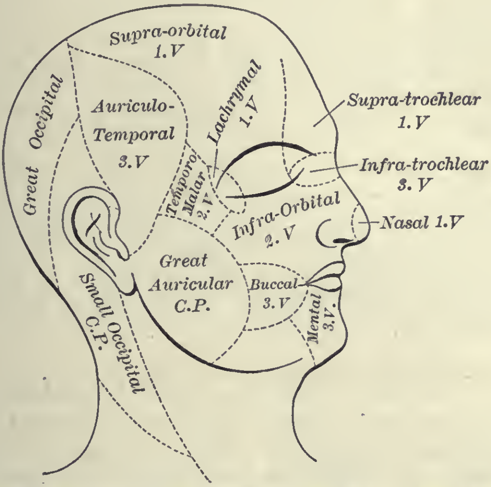
History and Examination by J. T. Eskridge, M.D.

James L., aged forty-five years, born in Ireland, single, engaged as a laboring miner in Colorado eighteen years, has been suffering from neuralgia of the right trigeminal nerve since March, 1885. His father was very intemperate in his youth; his mother died in childbirth. No nervous or mental diseases in the family. One brother died of consumption. In childhood the patient's health was excellent. He denies syphilis and alcoholism. Fifteen years ago he suffered from what his physician called scurvy. He had been living on salted food, and his feet and legs swelled, and he was weak. In 1883 he had an attack of typhoid fever. From 1883 to 1885 he suffered from rheumatic pains in joints while working under ground in wet mines. In February, 1885, he had a severe attack of rheumatism, with swollen and painful joints. The wrist, elbow, shoulder, knee, and hip-joints were involved. In March, 1885, he began to have pain in the region of the right inferior dental nerve. The attack was extremely severe for three weeks, and after this the pain was constant, but not so severe. The pain was limited to this nerve. Within a year from the time the neuralgia first began it had extended to the region of the face in front of the right ear, and involved an area there one or two inches in diameter. After the extension of the pain to the region of the right ear it became intermittent. He would suffer for a few days from severe pain in the inferior dental nerve, the next day from a dull pain in front of the right ear, when he would be free from pain for several days. The pain in 1889 occasionally extended to the superior maxillary nerve. The first division of the fifth cranial nerve was never involved. At this time the pain became constant again, with periods of severe exacerbation. Before this time he had several teeth extracted on the right side from the lower jaw, but he obtained no relief. During the summer of 1889 he had all his remaining teeth—twenty-three in number—extracted. This seemed to intensify his suffering, and his pain then was not only constant, but severe. The next three years were spent in seeking relief from his intolerable agony, but he never obtained more than three or four weeks' freedom from pain at any one time. He first consulted me on November 25, 1892. He is a heavily built, muscular man, and weighs about two hundred and twenty-five pounds. On careful examination no symptoms of impaired health are found outside of the regions of distribution of the second and third divisions of the right fifth cranial nerve. The absence of natural teeth, whose place has not been supplied by artificial ones, has resulted in permanent contractures of the masseter muscles, and it is impossible for him to open his mouth to the normal extent. The gums on the right side of the lower jaw and the lower lip on the right side are hyperalgesic, and the slightest contact of substances, especially if their temperature is cool, often causes violent paroxysms of pain. The gums have remained so sensitive since the extraction of his teeth that it has been impossible for him to endure the presence of a plate for artificial teeth, and during the last three years he has been compelled to live on liquid or semi-solid food. Tactile-sense is a little blunted on the lower lip on the right side. Temperature-sense on the right side of face, especially on the lower portion, remains about normal, except an increased sensitiveness for cold. Vision, hearing, and smell seem to be nearly equal on the two sides. Taste is more acute on left side. As he had undergone the various forms of treatment for relief of neuralgia of the fifth nerve, I advised him to have the three divisions of the nerve excised at the Gasserian ganglion.

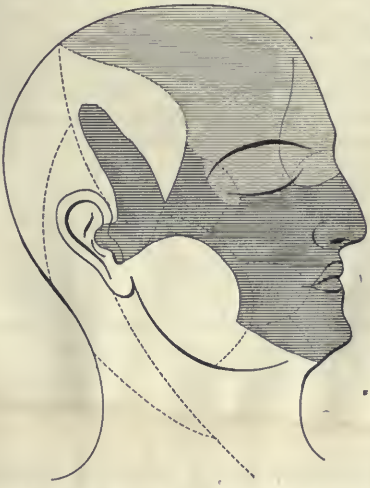
He entered St. Luke's Hospital the next day with the expectation of having this operation performed, but after he had remained in the hospital a few days his courage began to fail him, and he asked to have the superficial operation, of which he had heard, instead. I placed the patient under the care of Dr. Edmund J. A. Rogers, one of the surgeons of the hospital, and he, in the latter part of November (1892), excised a portion of the right inferior dental nerve in the dental canal. This procedure was acquiesced in by Dr. Rogers and myself, the more readily because all his paroxysms of pain started in the inferior dental nerve. At the same time we informed our patient that nothing more than temporary relief from pain would be likely to follow such an operation. For four or five days after this operation he was entirely free from pain. For the next two months, or until about the 4th or 5th of February, 1893, he experienced a momentary shooting pain in the right side of the lower lip once or twice daily. During these two months he had no pain or sore feeling in the front of the right ear, the region which had been the seat of constant pain for several years. Early in February, 1893, he took a cold. Immediately the face pain began to increase. The right lower lip, which after the operation was completely anæsthetic, became the seat of constant pain. Although the sense of touch was absent, yet a cup placed to his lips caused intense suffering throughout the distribution of the right inferior dental nerve. The pain spread over the region supplied by the second division of the right fifth cranial nerve. The slightest motion of the lips was sufficient to cause a paroxysm of neuralgia; even the act of swallowing was attended with severe pain in the second and third divisions of the nerve. After the middle of February he stopped work, and by the early part of March the suffering became so intense that he meditated suicide. Rather than take his own life, he decided to return to St. Luke's Hospital, and have the major operation performed. He entered the hospital the 9th of May, and the operation was performed on the 23d of the same month. Before the major operation he had grown quite nervous and depressed. The region of distribution of the right inferior dental nerve remained anæsthetic to touch,

FIG. 1.



Normal distribution of the fifth nerve to the face. (From FLOWER.)

FIG. 2.



Deeply shaded area represents almost total anæsthesia in case operated upon; light area, partial anæsthesia.

the same as it was immediately following the excision of this nerve. Pain was limited to the second and third divisions of the right trigeminal nerve, the first division never having been affected. Immediately after the second operation he was relieved of pain, and he has remained entirely free from it up to the present date, September 12, 1893.

Present condition. Patient has gained several pounds in weight since the operation, and feels quite well.

It will be seen that the first division of the nerve was not completely excised. Taste is absent in the right anterior portion of the tongue. Smell is present and equal on the two sides.

Hearing: right, 1/12; left, 1/6. Tuning-fork is heard better in left ear.

Since the operation he has complained of an annoying sensation, which he describes as a "feeling that he is breathing through the right ear when the mouth is closed." He states that he has had a constant dull feeling in the right ear since the operation, and two weeks subsequent to the operation the sound of his voice began to be intensified in the bones in the front of his right ear. This sensation has increased, and at times it is annoying.

CONDITION OF EYES BY DR. E. C. RIVERS.

The palpebral opening in the right eye is considerably wider than the left, and is apparent at a glance. The movement of the eyes is the same in all directions. Pupils equal and normal in size. Reaction to light and convergence normal. The sensibility in the right eye is very much reduced all over the cornea and conjunctiva, but everywhere present. Patient thinks it over one-half that experienced when left eye is touched in the same manner.

Vision: O.D., 20/100; O.S., 20/20.

Hy., 4.50 D., previously corrected.

Examination macroscopically and by oblique illumination shows:

Right eye: Cornea superficially cloudy throughout all that portion unprotected by the lids. The cloudiness is due to exfoliation of the superficial epithelial layers, and accounts for the diminution of vision, as when the pupil is dilated the vision improves to 20/70. The ophthalmoscope shows no abnormal condition of the rest of the optic media.

Left eye: Normal, except Hy.

When I examined the patient, about four weeks after the operation, there was no sensibility of the cornea of the right eye, and no cloudiness. Vision at that time was equal to the left eye—20/20. About the 20th of July I examined him again, and found the cornea insensitive everywhere except at the upper portion, at one point near the periphery, immediately above the middle of the cornea, where he could feel the contact of a probe.

OPERATION BY DR. EDMUND J. A. ROGERS.

The first operation, performed on November 28, 1892, was begun by a long free incision parallel to the ramus of the jaw and just beyond the face line. The flap was reflected forward, and the attachment of the masseter muscle scraped away from the broader portion of the jaw, just about the angle. A three-quarter-inch button was then trephined from the outer table of the jaw, and lifted to expose the canal.

The nerve was then hooked out and drawn from both directions, and about three-quarters of an inch excised. No antiseptic was used during the operation. The operation at the time was very satisfactory to the patient, and he left the hospital in a very happy frame of mind. There was considerable callus thrown out, but repair was so complete that when he returned to the hospital in May it was impossible from appearances to say which side had been operated upon. The two of my *confrères* who examined it both named the opposite side, as there were some old scars on the neck there from some early skin disturbances.

The agony that he suffered during the days that he was in the hospital before the second operation is beyond description. He would sit in a corner where no movement of air could reach him, and would not move, speak, or swallow if he could avoid it, on account of the severity of the paroxysm of pain which he endured.

On May 21st, after thorough preparation, he was placed on the table for the major operation. Chloroform was used as the anæsthetic, and he took it very badly. After the face incision had been made and the flap partly reflected, his heart failed almost completely, he became cyanosed, and death was imminent. With difficulty he was revived, but so slowly and so incompletely that it was decided that he could not stand the operation then. The wound was closed and dressed, and he was put back in bed, where in a few hours he fully recovered. On the 23d, two days later, the operation was again undertaken, ether being now used as the anæsthetic. We were assisted in the operation by Drs. Parkhill and Bagot, Dr. Atchison, of the resident staff, giving the anæsthetic. Rose's operation, as detailed by him, was closely followed, with few exceptions. The manual labor of the first part of the operation is very trying, and when the second portion is reached one has already done considerable manual labor. The internal maxillary artery was not ligated. It could easily be felt, and pulsation was visible by the electric illuminator; but it was not easily isolated, and after an aneurism-needle had been passed around it pulsation disappeared and did not return. No vessel was ligated throughout the operation. On tearing away the attached muscles from the base of the skull the blood oozed in slowly from all sides, and this, together with the great size of the patient's head (he requires a No. 8 hat), rendered it impossible to make any use of light in the deeper part whatever, and all the essential part of the operation had to be done by tactile sensation. The foramen ovale was easily made out and the nerves traced to it. I trephined well to the outer side of it, and then, with the chisel and mallet, cut through the intervening bone. I had hooks specially made from Rose's model, but found them too small to be of much service, working at so great a depth, and my only guide was tactile sense. Having made a free opening, by means of which I could easily feel the presumed site of the ganglion, I passed a sharply curved aneurism-needle under the ganglion and raised it from its bed. I then, by means of the sharp hook and other instruments, completely dismembered its substance down to my aneurism-needle. Being unable to see, this was a tedious and unsatisfactory proceeding. I then picked away the upper portion of what seemed to be the ganglion as high up as I dared go. I did not wash out the wound in any way, as the constant oozing of blood had kept the wound irrigated. I removed the coronoid process of the jaw entirely, and, to save time, followed Dr. Parkhill's suggestion of stitching the zygoma to the temporal fascia, instead of wiring it. I closed the wound completely and dressed it. No antiseptic was used in the wound or in the dressing, and no vessels were ligated, the oozing being allowed to fill the wound as it was closed. The patient expressed the greatest sense of relief on coming out of the anæsthetic, one of his first expressions being that he "would rather undergo the operation once a week than endure the agony." Convalescence was slow and uncertain, but in the long run very satisfactory. His whole nervous system seemed to have received a shock which rendered its mechanism very uncertain. For a few weeks the patient seemed very hysterical. For slight causes he would become very emotional, and from very slight disturbances his temperature would vary many degrees. No symptoms of septic infection manifested themselves, and, surgically, the recovery was very satisfactory. When the wound was first dressed it was found completely closed, and has given no trouble since. I had photographs of his full and side face taken the day before the operation and taken again now. From these it can be seen that the disfigurement is very slight. The region about and below the zygoma is slightly sunken, but hardly enough to attract attention. The most trouble in the after-treatment was from the anæsthesia of the conjunctiva, it being a couple of months before it could be left uncovered without some irritation manifesting itself.

August 10, 1894, the patient writes that he has had no return of the pain, and all discomfort in the right ear and around it has disappeared.

A CASE OF CONCURRENT SARCOMA AND HIP-JOINT DISEASE.

By J. Torrance Rugh, M.D.,
INSTRUCTOR IN ORTHOPEDIC SURGERY AT PHILADELPHIA POLYCLINIC, AND ASSISTANT SURGEON TO THE ORTHOPEDIC DEPARTMENT OF JEFFERSON MEDICAL COLLEGE HOSPITAL.

The coexistence of two active diseases in the same part has been denied by some authors, but admitted by others as a rare occurrence. The doubt, which first existed, as to the true condition in the case to be described was rather increased by this fact, but the clinical history and the examination have indubitably proven that such coexistence is possible. The case was an attendant upon the Orthopedic Dispensary of Jefferson Medical College Hospital, under the care of Prof. H. Augustus Wilson. It is especially interesting on account of both its well-marked clinical features and its rarity, for while there is no hindrance to the development of a sarcoma at the site of a hip-joint disease, yet such a condition has seldom, if indeed ever, been reported.

The history is as follows:

W. W., aged nineteen years, was born in Austria, and a resident of this country for two years. The family history is negative as to tuberculosis or syphilis. The patient is of small stature, but not because of ill health, for his personal history was quite good until he was fifteen years of age. At that time he fell, striking heavily upon his right hip. He suffered somewhat for a few days, but gave no special attention to it. Several weeks later, however, pain began in the same hip, and he complained of soreness and soon experienced difficulty in walking. These symptoms continued, with occasional periods of relief, for several months, until the soreness became extreme and enlargement of the part was observed. It gradually increased in size until one year after the receipt of the fall, when an abscess ruptured on the posterior surface just below the gluteal fold, and discharged a large amount of pus. Very great relief obtained after the contents had evacuated themselves, and he became stronger and healthier, but a sinus remained which constantly discharged purulent material. Within the next two years, or up to January 31, 1893, four other abscesses formed and opened at different points, showing that the diseased process was very much increased and that bony involvement was very extensive.

At this time he first came to the clinic, and was admitted to the ward of the hospital and prepared for an operation. On his admission his temperature was elevated, oscillating between 101° and 103°, and he had a marked hectic flush; the hip was very much enlarged; motion was absent, due partly to beginning ankylosis and partly to muscular rigidity; the skin was very tense and glossy; the veins were quite prominent over the affected region; and fluctuation existed at various points, while elsewhere the soft parts were hard and unyielding. The discharge from the sinuses was greatly lessened and the boy's general condition was quite serious.

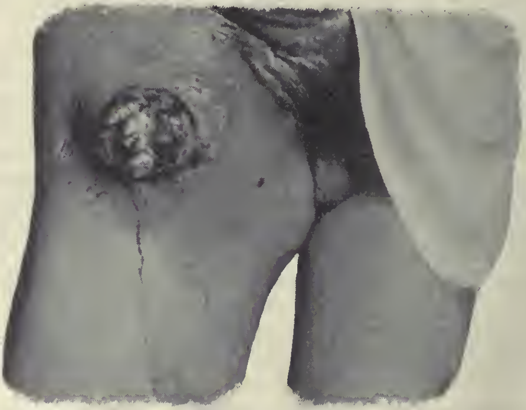
On February 2, 1893, Dr. Wilson exposed the deep structures of the hip by a long external curvilinear incision immediately back of the great trochanter, and found several pockets filled with tubercular pus and fibrous detritus. These he thoroughly emptied and also removed a large amount of dead bone from the femur. The acetabulum and surrounding bone were so extensively involved in the diseased process that they were not disturbed. Free drainage was secured by tubes, and the wound sutured. The tubes were removed on the third day, and the wounds washed out thoroughly once or twice a day with peroxide of hydrogen, followed by bichloride solution, 1 : 2000, and then injected with a sterilized 10 per cent. emulsion of iodoform and olive oil.

He was discharged from the ward on April 6, 1893, and was dressed two or three times a week in the out-patient department. When discharged his condition was much improved, he having gained both in weight and strength, and being able to walk, without the aid of cane or crutches, five or six squares to and from his home.

In the latter part of December, 1893, my attention was directed to a slight enlargement about one and one-half inches below Poupart's ligament and partially encircling the anterior and inner surfaces of the right thigh. In another week this had increased in size, was quite hard, and had all the appearance of a beginning abscess, excepting that fluctuation was absent. By the end of the first week in January, 1894, the circulation of the leg became very much interfered with because of the constriction of the large vessels by the increasing swelling. In another week, a sense of fluctuation was detected at several points, but one marked feature of it was the absence of the elastic and expansive feel of the true abscess, the sensation being more like that of the trans-muscular wave; however, on account of the pre-existing ostitis, the steady and comparatively rapid increase in size and the apparent fluctuation, an abscess was diagnosticated by all who saw and examined it. The veins were prominent; œdema was present, slight over the tumor, but very marked below it; the temperature, however, was not elevated above what it had been; pain and soreness were absent, as were also heat and redness.

On January 27th, Dr. J. P. Mann and I opened the supposed abscess at two points, one on the inner surface of the thigh and the other on the anterior surface, but found no pus. The finger introduced into the anterior incision came in contact with tissue which felt very much like a soft round-celled sarcoma. It was easily broken and easily penetrated with the finger, but not so readily as the caseated tubercular material or a recent inflammatory exudate. It seemed semi-organized and bled very profusely. Several pieces were detached, and upon examination thought to be sarcoma, both from appearance, which was quite characteristic, and from the history, which was then hastily reviewed. The uncertainty of the diagnosis, as well as the extensive involvement of the parts, caused us to refrain from further operative measures. The wounds were then closed with sutures and dressed antiseptically. The bleeding ceased upon closure, and as soon as the effects of the anæsthetic passed away the patient went home.

FIG. 1.

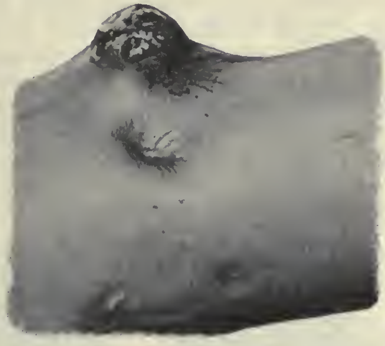


Front view of tumor (taken February 15, 1894). The opening of a sinus from the hip-joint disease is seen in the groin.

Some detached portions were examined microscopically by Prof. W. M. L. Coplin and Dr. D. Braden Kyle, and while neither would say positively that the tissue was sarcoma, yet both agreed that it had more of the characteristics of such than of inflammatory tissue, which it resembled. The doubtful point was the lack of uniformity in the condition of the walls of the bloodvessels, some of the vessels in the section showing distinct walls, while others had none, which may be explained by the pre-existing inflammatory action causing vascular thickening.

The clinical history is undoubtedly that of sarcoma, for the list of local and constitutional symptoms entailed in the production of so extensive an inflammatory exudate were all absent, while the steadily rapid development, prominent veins, apparent fluctuation (so often present in sarcomata), absence of pain, soreness, or constitutional disturbances, the non-involvement of neighboring glands, the macro- and, in part, the microscopical examinations all point toward sarcoma.

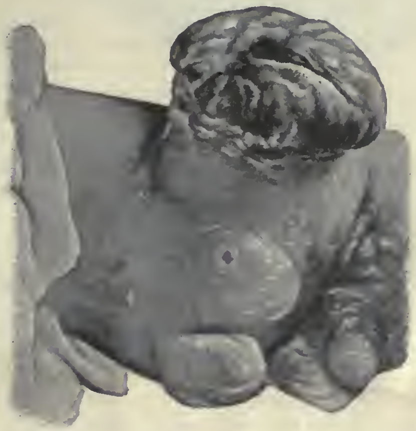
FIG. 2.



Side view of tumor (taken at same time as Fig. 1). Two sinus-openings and part of the scar of the operation are seen.

On February 13th, when I removed the dressings, there existed a large fungating mass at the site of the anterior incision. It was about one and a half inches in diameter, and was raised one-half inch or more above the skin, and from one of its vessels the blood spurted at least a foot, besides oozing very freely. The entire limb was very much swollen and the whole hip was enlarged. Several surgeons to the hospital saw it, and all unqualifiedly pronounced it sarcoma (Figs. 1 and 2).

FIG. 3.

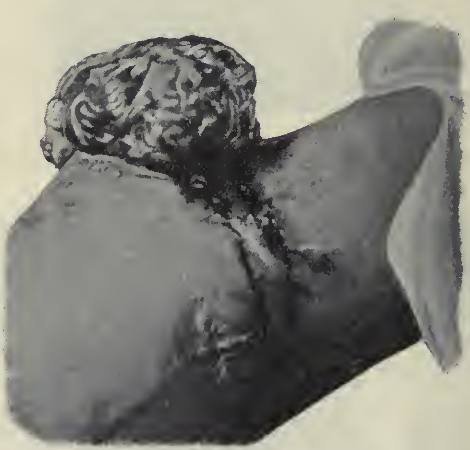


Front view (taken April 20, 1894), showing the increase in size of the masses of tumor, also the abdominal enlargement from extension of the tumor.

The situation of the growth and the complication of the tubercular ostitis involving the femur and ilium, with its accompanying ankylosis, precluded a hip-joint amputation. Extirpation was impossible, because of the involvement of the large vessels of the thigh and the size of the tumor. Erysipelatin injections were suggested, but not tried.

The patient continued to attend the dispensary, where the foul and fungating mass was dressed. It increased rapidly in size, and his condition became quite critical. Admission to the Philadelphia Hospital was secured for him, but he remained there only two weeks, and again came to our clinic (Figs. 3 and 4). At this time the skin of the thigh and leg threatened to break because of the œdema; he lost flesh rapidly, and had a characteristic waxy countenance; he could scarcely walk, and suffered much pain; there were no hemorrhages, except when the dressings were removed. He died on May 6, 1894, after an uncontrollable hemorrhage from the large mass of the tumor, lasting about twenty-four hours.

FIG. 4.



Side view (taken April 20, 1894), showing the fulness of the hip as compared with Fig. 2.

A post-mortem examination showed extensive caries of the acetabulum and ilium and upper third of the femur (including the head and neck), with pockets of caseated material, all of which was of a distinctly tubercular character.

The origin of the tumor was first thought to be from the connective tissue about some of the sinuses, but this proved to be incorrect, and whether the pre-existing ostitis had aught to do with the growth could not be determined.

The sarcoma began in the femur, at a point one and a half or two inches below the junction of the neck with the shaft, and spread through the contiguous tissues to the joint and into the pelvic and abdominal cavities. The bone at the point of origin of the tumor was quite soft and spongy, and had so lost its characteristic shape and structure that a medullary cavity or surrounding lamina of dense bone could not be recognized. The large vessels were much constricted from the pressure of the mass, the large saphenous veins being almost closed.

REVIEWS.

L'HYSTÉRECTOMIE VAGINALE CONTRE LE CANCER DE L'UTÉRUS ET LES AFFECTIONS NON-CANCÉREUSES. Par L. GUSTAVE RICHELOT, Professeur Agrégé a la Faculté de Médecin de Paris, Chirurgien de l'Hôpital Saint Louis. Pp. xvi. 446. Paris: Octave Doin, éditeur, 1894.

VAGINAL HYSTERECTOMY FOR CANCER AND NON-CANCEROUS AFFECTIONS OF THE UTERUS. By L. GUSTAVE RICHELOT, etc.

THIS monograph, from the pen of one who is entitled to speak with authority, will serve to stimulate the interest in vaginal hysterectomy which has been recently awakened in America. Being almost entirely a record of the author's personal experience, it is more valuable for reference than are many of the papers and discussions on this subject. The introductory sections on the history of the operations in France (or rather in Paris) are followed by brief analyses of the writer's own cases—forty-four hysterectomies for cancer, with three deaths, and two hundred and nineteen for non-cancerous affections, with eleven deaths, the total mortality being 5.1 per cent. Taking up the subject of pelvic suppuration first, he devotes several pages to an analysis of the fatal cases. Among the accidents he notes only two cases in which the rectum was injured, and one of vesico-vaginal fistula, certainly a remarkable record. The section on the remote results of hysterectomy will be read with especial interest by those who fear that total extirpation for pelvic suppuration is a palliative rather than a curative procedure. The author states positively that the climacteric disturbances have not been serious, pain has been relieved or removed, and in no instance has there been loss of sexual feeling. Operations for hæmatosalpinx, hydrosalpinx, and salpingo-oöphoritis are then discussed, with a section on "complicated retroversion." By the latter term the writer signifies retro-displacement of the uterus, with prolapsed and adherent tubes and ovaries, giving rise to severe symptoms, which cannot be relieved by ordinary treatment. He admits that six uteri were removed which did not belong to this category, since they were retroverted, but non-adherent, and offers as an excuse the fact that the cases were aggravated, of long-standing, and the patient near the climacteric. It must be confessed that American readers will hardly accept these arguments as valid.

Under the head of "Minor Lesions" are included salpingitis, cystic ovaries, "painful metritis," in short, cases in which the pelvic symptoms are more severe than are explained by the anatomical changes found in the organs removed, and in which other treatment, surgical and non-surgical, has failed to give relief. Sixteen hysterectomies were performed on this indication, with no deaths.

Considerable space is devoted to the subject of extirpation of the uterus and adnexa as a last resort in pelvic neuralgia, since the writer evidently feels that he is open to criticism in this direction. Seventeen cases are reported, with two deaths.

Secondary vaginal hysterectomy (after previous castration), hysterectomy for fibro-myomata and for prolapsus are considered at length. In sixty-seven operations performed for these conditions there was only one death.

The second division of the book deals with the indications for the vaginal operation and its advantages over cœliotomy.

The concluding portion, devoted to technique, will be read with especial interest. Three classes of cases are recognized from a surgical standpoint—those in which the uterus is movable, in which the uterus and adnexa are more or less adherent, and cases of fibro-myomata, which can be removed per vaginam, either entire or by morcellation. The various steps of the operations in each are described with great minuteness.

A movable uterus should be removed, he thinks, in five or six minutes. He first dissects off the bladder, but does not incise the vesico-uterine fold of peritoneum, then enters Douglas's pouch, retroverts the uterus, passes two fingers over the fundus while making downward traction on the cervix, and cuts upon their tips as they are inserted into the anterior fornix. The entire left broad ligament is then seized with a single clamp, if possible, and is divided close to the uterus. An additional clamp may be necessary to secure the upper portion of the ligament. The opposite ligament is then clamped and divided and the uterus is removed. If very large, it may be necessary to remove it by morcellation. Small forceps are used to secure bleeding points and sometimes to unite the edge of the peritoneum to that of the vagina. The clamps (which, the author admits, cause considerable pain) are removed in forty-eight hours. Secondary hemorrhage is a rare accident. The tampon is not disturbed for five or six days, better seven or eight. The patient usually leaves her bed at the end of two weeks and is discharged at the end of the third.

The description of removal of the adherent uterus is somewhat involved. Douglas's pouch is first opened and a long-bladed retractor is introduced through the incision, the bladder having previously been dissected off and held upward by a second retractor. Guided by the index-finger in front and the middle finger behind each broad ligament, their lower portions are clamped and divided. Adhesions of the adnexa are then separated and the uterus is removed by morcellation, in the following manner: The cervix is split transversely with scissors and as much of the posterior flap as possible is excised; traction is then made on the remaining flap, which serves to depress the anterior surface of the body of the uterus. A large portion is removed with the anterior flap. The remainder of the organ is drawn downward, and, if necessary, is divided vertically or obliquely; traction is made on each half, and smaller sections can now be excised from the centre of either. As soon as the vesico-uterine fold is encountered, it is easy to protect the bladder from injury. The cornua having been reached, the adnexa can be clamped and the fragments of the uterus removed. The diseased adnexa, pus-collections, etc., then receive attention. A careful description of this important step is given, even the method of protecting the healthy peritoneum from contact with septic fluids.

In the section on the removal of fibroid uteri the difficulties of the operation are somewhat under-rated. The same criticism applies to the separation of intestinal adhesions.

A condensed history of all the writer's cases concludes this valuable monograph, which, though evidently written from the standpoint of an enthusiast, contains much that is interesting and instructive. While his own results may justify the author in regarding cœliotomy for pelvic tumors and suppuration as an operation which is rarely indicated, the conservative reader will infer that his success has led the eminent surgeon to give his operation a wider application than would seem to be justifiable. However ingenious may be his arguments, few will be disposed to remove the uterus for such indications as intractable retroversion and pelvic neuralgia.

The style is clear and pleasing, though at times the author indulges in the prolixity for which his countrymen are famous. H. C. C.

DIFFICULT LABOR. By G. ERNEST HERMAN, M.B. Lond., F.R.C.P., Senior Obstetric Physician to the London Hospital, etc. With 162 illustrations. Pp. 443. New York: Wm. Wood & Co., 1894.

THE topic of this book is most seasonable, and its interesting style and the practical manner in which it deals with some difficult points in obstetrics should make it a welcome addition to the library of both the obstetrician and the general practitioner. The illustrations are abundant, fairly well executed, and serve fairly well in elucidating the text. The volume is of convenient size and clearly printed.

The subject-matter of the book begins with a definition of natural labor, and an appropriate paragraph urges the importance of early diagnosis. The first abnormality to receive attention is occipito-posterior positions. Here the importance of diagnosis by palpation is urged, and the physician is advised to bring the head into a favorable position by external manipulation. In treatment the importance of rotating and flexing the head with the hand is dwelt upon, followed by the application of the forceps. The author does not advise forceps rotation in these cases, but does not mention the fact that intermittent traction with Simpson's forceps will often result in rotation of the head, the forceps remaining applied to the sides of the pelvis. In treating of face presentations advice is given to change them to vertex, if possible. In cases where the chin is behind it should be turned to the front by the hand, and delivery completed with forceps. Failing in this, perforation is justifiable. A separate chapter is given to the various mouldings of the head which occur in different presentations, and appropriate illustrations are appended.

In treating of breech presentations the usual methods of delivery are described, the author strongly condemning the use of forceps. He does not consider it advantageous to draw down a loop of the cord, and has seldom found it necessary to place a loop of cord at the extremity of one of the oblique diameters of the pelvis. In delivering the after-coming head he prefers a combination of the finger in the mouth, and pulling down the jaw with suprapubic pressure. He considers best of all the use of forceps. In transverse presentations the subject is treated fully, and various methods of delivery are well illustrated. Abnormalities connected with the cord, or with the small parts of the fœtus receive adequate attention, as is also the case with the subject of twin pregnancy. An interesting account is given of dystocia from monstrosities.

In treating of inertia of the uterus a distinction is made between primary and secondary inertia. By the former is meant that labor pains are weak, or few, from the beginning of the labor, while the latter refers to inertia from exhaustion. The method of treatment for these two conditions is held to be radically different. For the first, the duty of the obstetrician is to hasten delivery, either by forceps, or traction upon the legs or breech. In secondary inertia it is held that to end the labor will almost invariably bring on post-partum hemorrhage. It is stated that ergot has no effect upon secondary inertia, because the nervous power of the uterus is exhausted. Opium, used freely, is recommended for this condition. Our experience in this regard has differed considerably from that of the author. Examination of the mother and the condition of the uterus in these cases has seemed to us to call for prompt delivery, the nervous prostration from which the patient suffers yielding promptly to strychnia, alcohol, digitalis, and external heat. Manual compression of the uterus, with massage, with hot intra-uterine douche, followed by a light tampon of iodoform gauze, have been sufficient in our hands to prevent the occurrence of post-partum hemorrhage. Opium seems to us indicated only when exhaustion comes on before the rupture of the membranes. Under the title of "Obstructed Labor" the author calls attention to tonic contraction of the uterus, and urges the necessity of immediate delivery. The diagnosis between uterine inertia and tonic contraction of the uterus is again emphasized by putting the symptoms of the two in direct contrast in tabulated form. No mention is made in this connection of symphysiotomy for the purpose of overcoming an obstruction to labor caused by moderate disproportion between the head and the pelvis.

The author defines a contracted pelvis as a pelvis which alters the course of labor. This definition certainly could be applied to a justo-major pelvis in view of the abnormal presentations and precipitate labors which are sometimes observed in pelves of this kind. The common forms of abnormal pelves are described and illustrated. The generally contracted or justo-minor pelvis is said to be very difficult of diagnosis, and is usually only discovered by difficulty in labor. If external pelvimetry and palpation be employed, this form of pelvis we believe will be readily diagnosticated before the beginning of labor. In describing the results of labor in contracted pelves, various injuries to the head and body of the child are described, together with the risks which the mother runs in these cases. In diagnosticating size and proportions of the pelvis the posterior interspinous measurements are held to be of importance by reason of their relations to the anterior measurements. Johnson's method of pelvimetry by the introduction of the entire hand is illustrated.

The mechanism of labor in the flat pelvis and the small round pelvis is clearly given in parallel columns, the treatment of flat pelves being version, while in the small round pelvis the use of forceps is advised. In dividing contracted pelves for the treatment of labor the writer indicates that it is possible for a living child to pass through the pelvis whose antero-posterior diameter is at least three inches. While this may be in many cases true, we believe that many infant lives are lost by the endeavor to extract children from pelves whose antero-posterior diameter is three inches without enlarging the pelvis, by placing the patient in Walcher's position, or by performing symphysiotomy. In choosing the time for the induction of labor the author properly urges that labor be brought on at once when the head cannot be readily pressed into the brim. In treating of the choice of operation in contracted pelves, when the patient is at term, the author gives us to understand that the life of the child is not to be considered unless the parents especially desire its preservation. We believe that this is scarcely the impression which the author means to convey, and yet he mentions craniotomy and Cæsarean section in such a way as to give us this inference. For artificially dilating the os and cervix he especially prefers the water-bag of De Ribes. In stating the indications for immediate craniotomy, he again gives us the impression that Cæsarean section is not to be taken into account, for he would immediately perforate in cases where the conjugate diameter is less than three inches and the patient is at term, the head not engaging. In choosing the forceps he would apply them when the long diameter of the head is transverse, the anterior fontanelle as low as the posterior, the antero-posterior diameter of the pelvis being three inches or more. No mention is made of any effort to cause the head to descend by suprapubic pressure, by Walcher's position, or by placing the patient upon a suitable chair. We have been most successful with symphysiotomy in two cases of just this nature.

In comparing the forceps and version it is stated that forceps delivery may need hard pulling, but that is the only difficulty about it. In our observation, hard pulling with forceps is seldom resorted to without some complication resulting to mother or child. The ease with which turning can be performed depends considerably upon the anæsthetic employed and the operator's dexterity. Its advantages are well stated by the author. In treating of labor in a small round pelvis, when impaction occurs the author would apply forceps, and pull. If the fœtal heart cannot be heard, the head should be perforated at once. The author would perforate when he had failed to deliver by forceps by efforts extending at intervals during an hour. The rarer forms of contracted pelvis are fully illustrated by the text and pictures.

In treating of delayed labor through failure in dilatation of the soft parts, the author has found ten grains of antipyrin every two hours very useful. In treating of labor complicated by tumors it is stated that fibroids predispose to post-partum hemorrhage. Under the head of "Rupture of the Uterus" the author defines the lower uterine segment as the part corresponding to the line of firm attachment of the peritoneum. In treating this complication suture of the rent is advised when the rupture is complete; when incomplete, drainage, preferably by gauze, has given good results. Rupture of the perineum is to be treated by immediate suture with chromicized catgut. Accidental hemorrhage and post-partum hemorrhage receive adequate treatment. In placenta prævia we have seen excellent results in tamponing the os, cervix, and vagina with antiseptic gauze, which we should much prefer to using tents. Post-partum hemorrhage is thoroughly treated. We are glad to note the author's disapproval of the use of perchloride of iron within the uterus. Dührssen's treatment of post-partum hemorrhage by intrauterine tampon of gauze does not receive indorsement. The author urges especially compressing the uterus between one hand in the vagina and the other above the pubes. In treating of transfusion, intravenous transfusion is well illustrated. We have not found it necessary to open a vein in a patient, but simply to inject saline fluid into the connective-tissue spaces.

The forceps receives adequate illustration. We do not favor pendulum movements with the forceps, but prefer axis-traction, often with the assistance of tapes. Internal version and embryotomy are fully described and well illustrated. The book closes with a description of Cæsarean section, of the Porro operation, and symphysiotomy. In Cæsarean section we do not find hysterectomy after the extraction of the child advised, although it remains in a large number of cases the best operation. The author describes symphysiotomy, but gives a guarded opinion concerning its value. He seems especially uncertain as to the permanent results of the operation as regards the pelvis. Our experience and the condition of two patients under observation a year after symphysiotomy lead us to believe that the pelvis is permanently uninjured by the operation.

The reader will find this book an interesting and pleasant volume. The wide experience of the author has given him ample material from which to draw his conclusions. Some of his methods of treatment are not the ones commonly used by those who practise obstetric surgery in America at the present time, but this does not militate against the interest which the book excites in the reader. We commend the book to the reading of physicians and all interested in the study of obstetrics

E. P. D.

Diseases of the Ear: A Text-book for Practitioners and Students of Medicine. By Edward Bradford Dench, Ph.B., M.D., Professor of Diseases of the Ear in the Bellevue Medical College, etc., New York. With eight colored plates and one hundred and fifty-two illustrations. 645 pp. New York: D. Appleton & Co.

This books seems to us cumbersome and far too large for the purpose for which it has been prepared, viz., for the instruction and direction of "practitioners and students of medicine." The little these busy men can learn of otology, and the little they can do themselves for the ear, can be set forth in a book of two or three hundred pages. These large treatises on the ear generally narrate what specialists have done or are doing for aural maladies. Hundreds of pages in such books can have no possible interest for the general practitioner nor for the student of medicine. They can be understood and criticised only by aurists purely on their otological merits or demerits.

The anatomical portion of this book, with its beautiful plates, leaves nothing to be desired; it would be hard to find more elegant and instructive plates than those running from I.–IV. But after leaving the chapters on anatomy, at page 48, we are launched into six hundred dreary, wordy pages, which contain little good advice, few good illustrations, and much antiquated and erroneous direction regarding the treatment of aural diseases. In the treatment of boils in the ear, for example, only the employment of a local germicide, like a solution of menthol, carbolic acid, or ichthyol, will do any good. The early incision recommended by the author will not only increase the irritation and pain, but make a furrow for the implantation and growth of pathogenic germs. Incisions, like poultices and leeching, in furunculosis of the external ear, belong to the age of septic surgery. Certainly the modern otologist will not agree with the author in resorting to the use of the catheter before trying Politzer's air-bag for inflation of the tympana in tubal catarrh, nor in any other condition demanding inflation of the tympanum, and no aurist who understands his handicraft will employ cocainization of the nares before inserting the Eustachian catheter. Such preparation is not necessary; for if the surgeon knows how to catheterize the Eustachian tube, he will not hurt the patient. If the Eustachian catheter cannot be inserted without force and pain to the patient, it should not be inserted at all. In fact, both Politzer inflation and catheterization of the Eustachian tube are not needed so frequently as was once supposed, because of the now well-known danger of forcing septic matter into the drum-cavities by their employment, especially in acute processes in the naso-pharynx and middle ear. There is much more likelihood of their doing harm at such times than good. In fact, the catheter should never be employed in acute catarrhal processes in the naso-pharynx and middle ear, and Politzer's method only exceptionally, and then with the greatest gentleness and caution. And even in chronic catarrhal otitis media, where they find their chief application, both must be employed gently, especially the catheter, for fear of wounding the delicate structures of the nares. To cocainize the nares and then wound them would deprive the surgeon of the valuable information that he is hurting his patient and rendering him liable to all the bad consequences of a lesion in these parts.

The knowledge of bacteriology has revolutionized our ideas of treatment of especially acute diseases of the ear. We should be careful, therefore, in acute otitis media, which we know is due to the presence of a pathogenic germ in the middle ear, where it has gone from the naso-pharynx, not to throw fresh germs into the drum-cavity by any form of inflation of the simultaneously inflamed and septic nares. Spray these parts with a mild antiseptic solution; *apply no leeches*, for they cannot draw septic matter from the drum-cavity; apply *dry* heat over and about the outer ear, or, possibly, if the ear can endure such a burden, drop into it ten drops of a warm watery solution (1.5 to 2 per cent.) of carbolic acid. So much the general practitioner can do toward aborting the process or hastening spontaneous rupture of the membrana tympani, and no more. If the pain continues for six to twelve hours, or if it grows worse, without spontaneous rupture, especially in children, the membrana must be incised freely and an escape offered to the pent-up and generally inspissated exudation. This operation no general practitioner is able to perform unless he has specially learned it before he begins his general practice. Then, why waste time by trying to tell him in a book how to do it? After paracentesis of the membrana, or after its spontaneous rupture and the setting-in of a discharge from the ear, the ear should be let alone. The most that should be done is to insert a thin strip of iodoform- or carbolic-acid gauze pretty well into the auditory canal, but not against the membrana, lay a little tuft of the same gauze or iodoform- or boric-acid cotton in the concha, and let the organ alone for twelve to twenty-four hours, according to the quantity of discharge in the meatus and concha. This discharge marks the escape of pathogenic elements from the drum-cavity, and should not be interfered with. Nor should the risk of secondary infection be run by syringing or blowing medicaments of any kind into the external meatus in acute otitis media; and instruction to do these things is most surprising, as found in the pages of this book, the latest aspirant to guide the general practitioner in the knowledge and treatment of ear diseases. He should be told what *not* to do in acute diseases of the middle ear, and that in chronic ear diseases, both catarrhal and purulent, he can do little or nothing.

It is not surprising that after ending his directions for treatment of acute otitis media the author turns to the consideration of acute mastoid disease. We have never known acute mastoid disease to follow acute otitis media when the latter has been promptly and properly treated. In every case of acute otitis media purulenta it is probable that pus is also in the mastoid antrum. But when there is a perforation in the membrana and a current of exudation has begun to flow outward a siphonic action takes place from the mastoid region, tending to empty the latter of its pus, if the siphonic outflow is not impeded by improper treatment of the ear. Such treatment, by setting up secondary irritation and infection in the membrana and drum-cavity, puts a stop to the outflow of pus, and may lead to mastoid complications.

We cannot, therefore, too strongly condemn the suggestion to employ a middle-ear syringe (p. 334) for washing out and medicating the drum-cavity in the last stages of an acute otitis media. It is meddlesome and infectious aural surgery, as we have often observed.

Chronic catarrhal otitis media is well described, and the usual means of treatment set forth. But the general practitioner can do little or nothing toward carrying out such treatment as is indicated in this disease. The author now stands alone in recommending (p. 512) total excision of the membrana tympani and the two larger ossicula for the relief of the symptoms of catarrhal otitis media. This operation is invariably followed by more or less inflammatory reaction, and the patient is worse in consequence of it. The stapes can be liberated and mobilized without resorting to such violence to the conductors of sound, either by removal of the incus or by simple passive motion with a probe after tympanotomy. General anæsthesia, however, is required for any operation on the middle ear, because cocainization will not produce enough local anæsthesia to keep the patient still, and furthermore cocainizing the drum-cavity is likely to produce not only acute otitis but toxic results, and it is to be regretted that the author favors such a method of local anæsthesia.

In chronic purulent otorrhœa removal of the remnants of the membrana and carious ossicles is indicated if ordinary antiseptic treatment has not checked or greatly diminished the quantity of the purulent discharge from the ear in the course of a year. If this operation were performed more frequently and promptly, there would be little need for mastoid operations. And in no instance should a mastoid operation simply for the cure of chronic otorrhœa be performed before excision of the remnants of the diseased membrana and ossicula has been effected. The latter operation, without resort to a mastoid incision and resection, will usually cure the chronic purulency, but a mastoid operation without excision of the diseased conductors in the drum-cavity will not check the otorrhœa, as we have witnessed. In no case of chronic purulency in the drum-cavity should the stapes be removed, as its removal from the oval window offers an entrance to pus into the labyrinth and cranial cavity.

Much space is given to the consideration of operations on the mastoid, the sinuses of the brain, and even deeper cranial contents. A mastoid operation or any form of trepanation at this point is rarely demanded simply as a means of relief of an ear disease. When a mastoid operation is thus demanded, it should be directed toward the antrum by Stacke's method.

When a mastoid operation becomes a vital indication, there will also be found the concurrent necessity to penetrate still deeper within the cranium, and it therefore should never be undertaken at such a time by anyone unprepared to perform any profounder cranial operation which may be required.

The aurist's duty is to warn against the dangers of neglect of chronic otorrhœa and to clean out the septic matter from the suppurating drum-cavity, perfect drainage, and promote asepsis of this space. He will thus in numerous cases prevent mastoid necrosis, sinus-thrombosis, and cerebral abscess. If the two latter diseases arise, however, they fall almost entirely within the province of the general surgeon. It seems, therefore, out of place that these subjects should be discussed at length in a book on ear diseases and their treatment.

One is struck by the fact that this voluminous book has been written without any acknowledgment of the labors of American aurists in the fields of intratympanic and mastoid surgery. Want of space cannot be the excuse. In another edition we hope von Troeltsch's name will not be spelled "Troelsh" (pp. 85, 342, and in the Index), and that the tautological expression "Preliminary Preparations" (p. 465) will not appear.

C. H. B.

Human Anatomy. A Complete Systematic Treatise by Various Authors. Edited by Henry Morris, Esq., M.A, M.B. Lond., F.R.C.S., Surgeon and Lecturer on Surgery, formerly Lecturer on Anatomy, at the Middlesex Hospital; late Examiner in Anatomy in the University of Durham, and for the Royal College of Physicians on the Conjoint Board. Philadelphia: P. Blakiston, Son & Co.

This work is represented by a volume of 1286 8vo. pages by ten authors, illustrated with 791 woodcuts, 214 of which are printed in colors, from drawings made expressly for it. It is with pleasure that we note a new departure inaugurated in the presentation of a book of such excellence by ten authors, all of whom are eminent authorities on the subjects upon which they have written. "Osteology," by J. Bland Sutton, F.R.C.S.; "Joints," by the Editor, Henry Morris, F.R.C.S.; "Bloodvessels and Lymphatics," by William J. Walsham, F.R.C.S.; "Nervous System," by H. St. John Brooks, M.D.; "Eye," by R. Marcus Gunn, F.R.C.S.; "Tongue, Nose, Ear, Heart, Voice, Respiration," by Arthur Hensman, F.R.C.S.; "Organs of Digestion," by Frederick Treves, F.R.C.S.; "Urinary and Generative Organs," by

Wm. Anderson, F.R.C.S.; and "Surgical and Topographical Anatomy," by W. H. A. Jacobson, F.R.C.S.

The histology of tissues has very properly been omitted, except so far as is necessary in pointing out the modes and dates of development of bones, and in a few other instances.

It is a feature of great utility to the student to note that the origin of the muscles is marked in red and the insertion in blue lines, and the ligamentous attachments by dotted lines upon each bone. The general plan of the osteology is represented by the description, manner of articulation, attachment of muscles, blood-supply, and ossification, under distinct headings with heavy type. The text is clear, concise, devoid of combined term-descriptive words, which are so trying to the novitiate. In the illustrations, marginal notes with lines are used, instead of the old numbers with foot-note description. This is a great advantage, enabling the student to see at a glance the part described.

In the section on the joints we are brought by the editor upon familar ground, as his large work on the subject is constantly in memory before us. The outline is here classification, description of parts and ligaments, arterial supply, nerve-supply, and movements, indicated in large type.

In the part devoted to the muscular system, a short description is first given of the shape of each muscle, then follow in order its origin, insertion, structure, nerve-supply, action, and relations. These are all in large type and paragraphed. In smaller type are given after each muscle its variations. This description is of great assistance to the student, facilitating his ready reference to any point of interest. In the illustrations of this particular part, the system followed throughout the book of leading lines to marginal names is most noticeable, giving to each illustration perfect clearness and accuracy. It marks a long step in advance of the method of engraving names across the parts described, or the older plan of reference to numbers. The few pages added to this article by J. Bland Sutton, F.R.C.S., on "Abnormal Muscles," are of very great use to the student, giving in small space what he otherwise would look over many pages to find in other works.

It is very evident that the foregoing portions of the work have been reviewed by the various authors, as they give evidence of uniformity of action that is not so apparent in other parts.

The section devoted to the vascular system is remarkable for its clearness of description and the selection and beauty of its illustrations, many of the drawings being repeated to avoid the labor of turning back for reference. The colors have been well selected and the drawings finely executed. In the nervous system more colors might have been used to advantage in illustrating, particularly peripheral distribution. The article on the eye is most handsomely illustrated in several colors, and accurate in the details of its text. The same might be said of the ear, but there should be a revision of the French measurements, not only here but in other parts of the work, as some inaccuracies have occurred. The tongue and nasal cavities are well illustrated and tersely described, but the dimensions of the nares, either at the vertical, horizontal, upper or lower parts, are not given. This would have been, from a surgical point of view, of great value.

The article on the "Thoracic Viscera" is fully illustrated and written in a manner which will meet with favor. The description of the pharynx could with benefit be enlarged and more profusely illustrated.

The article on the "Digestive Organs" will bear some revision, but special praise must be given to the article on the peritoneum, for the author has given to the student that which has been long wanted. A clear understanding of this important part of human anatomy has been to students a stumbling-block of long standing. It is with satisfaction that we find here a description so clear that the most obtuse cannot fail to understand it.

The section on the urinary and generative organs, with some few exceptions, is well written and carefully illustrated, and we note with pleasure that the drawings assume the natural rather than the diagrammatic outlines; the vagina being no longer represented as a cylinder, but as it is found in the body. One of the exceptions noted is the position of Alcock's canal, which is stated as being "one inch above the inner margin of the tuber ischii;" this we think is too high. The section on surgical anatomy does not reach the high standard that we would wish. The illustrations are profuse, but it appears that the author has been cramped, and could have added much more, for hernia seems to have suffered very decidedly.

The index occupies sixty pages of the 1286, and has been prepared with great care, derivations being given in many instances with the names.

In reviewing the whole work, it may be said that the criticisms offered are small, but we have made use of the critic's privilege to point out all errors which we have noticed, as well as points of interest, which we believe possible to improve in a subsequent edition. The faults and errors, if they can be so called, are not such as would mislead a student. We therefore heartily recommend the work to beginners in human anatomy.

A. H.

LECTURES ON THE SURGICAL DISORDERS OF THE URINARY ORGANS. By REGINALD HARRISON, F.R.C.S. Fourth Edition, Rewritten. London: J. & A. Churchill.

THE surgeon who, on receipt of the fourth edition of Reginald Harrison's now classical work on *Surgical Disorders of the Urinary Organs*, slips this book into his satchel, with anticipations of the time required by his next railway trip to some neighboring town being profitably and delightfully spent, will be grievously disappointed on comfortably settling himself to his reading to find that with Continental disregard for time and convenience its publisher has provided in the uncut leaves a task which is well inclined to turn the kindly reviewer to a carping critic.

Once made accessible, however, this work will amply repay not only a general perusal, but a careful study. It has been very extensively re-edited and considerable enlarged, so that even those who are thoroughly familiar with former editions will find much that is new in this.

The importance of thorough irrigation in connection with the prevention of urethral stricture is strongly emphasized in the first lecture. Sulphocarbolate of zinc, 2 grains to the ounce, forced into the urethra by means of an irrigator, the nozzle of which fits tightly into the meatus, is the remedy of choice in the treatment of gleet, while deep urethral irrigation with a solution of perchloride of mercury is considered most effective in shortening and moderating an attack of gonorrhœal orchitis.

The second lecture is devoted to the surgical anatomy of the urethra. This is brief, but very clear, and is considered solely from the clinical side. Thus, in speaking of the raphe, the statement is made that from extravasation or suppuration it may be pushed from one side to the other, or even slightly curved, but that the incision to open the perineum must correspond with such a deflection if the operator wishes to avoid troublesome hemorrhage.

While considering the nervous disorders of the genito-urinary organs, neurotomy of the spermatic cord is suggested as a means of curing neuralgia of the testis, some nerve-filaments from the sympathetic being teased out and resected. In one case cure was complete, nor was there any alteration in the nutrition of the testicle. In the passage of instruments the injection of a few drops of a 10 per cent. solution of cocaine is advised when patients complain of pain. Harrison states that the surgeon who boasts that he has never failed to pass an instrument into the bladder is to be regarded with some suspicion. The use of the olive-tipped bougie in the diagnosis of stricture is condemned, the flexible, slightly bulbous and conical bougie serving a better purpose when guided by the *tactus eruditus.* Gradual dilatation is advised for strictures of a recent date and those more advanced where the process is not intolerable to the patient, and the dilated condition may be maintained with a moderate amount of care. Continuous dilatation is advised for tight strictures where catheterism is attended with more than ordinary difficulty. Jordan's plan of introducing a bougie in place of a catheter is spoken of favorably, since thus there is a more rapid and complete dilatation of the stricture due to the hydrostatic pressure. This instrument is more readily introduced than a catheter, and need not be taken out. The continuous method not only favors absorption, but leaves the stricture in a condition less liable to contract.

Excision of the cicatricial mass is advised for traumatic strictures of the deep urethra. After excision the wound is closed over a full-sized bougie, the tissues covering the urethra being brought together in layers by catgut sutures and the skin treated in like manner. The wounds close by first intention, and in cases observed some months after operation there was no relapse. Electrolysis is condemned.

On the etiology of urinary fever no light is thrown, excepting that Harrison is inclined to believe rather in ptomaïne-poisoning than in the action of the micro-organism ; indeed the bacterium coli commune, which now looms up as an important factor in this complication, is not mentioned. The remedies of choice are aconite and quinine, with boric acid as a prophylactic.

After urging the importance of careful and well-directed efforts to pass catheters in cases of retention of urine, the statements are made that with a fully distended bladder it is almost impossible to injure the peritoneum by suprapubic aspiration ; that this method is practically painless ; that it may be repeated almost indefinitely. This procedure is only to be advised when there is chance of restoring the patency of the urethra. When this chance is remote the urethra should be tapped at the apex of the prostate. The importance of strychnia, cantharides, and galvanism in restoring tone to the bladder is strongly insisted upon.

A special instrument of the author's device is described as best fitted for internal urethrotomy. In this operation the value of the administration of antiseptics by the mouth is pointed out. For direct injection a solution of carbolized oil, 1 : 20, precedes the introduction of the instrument. After preliminary division of the stricture the author's instrument is introduced and the stricture is *divulsed* to full calibre. A full-sized catheter is then passed, the bladder is washed out with warm boric lotion, followed by bichloride of mercury, 1 : 6000, about an ounce of the latter solution being allowed to remain in the bladder. The fourth or fifth day a bougie is passed. After this, sounds are continued regularly. In the anterior urethra the Otis urethrotome is advised in certain strictures of large calibre, apparently full credence being given to the statement that hemorrhage is never severe and is easily controlled. Great importance is attached to the method of partly cutting and partly divulsing. Holt's operation of divulsion is praised, though most surgeons have long since ceased to employ it.

For drainage after perineal puncture, Harrison employs bougies with metal mounts, having openings on either side for retaining-tapes. These are about as thick as the index-finger; that is, they accurately fit the opening for which they are intended. This accurate fitting prevents hemorrhage. A soft-rubber tube is substituted in forty-eight hours. The question of drainage after this operation receives due consideration, and it is pointed out that this cannot possibly be efficient when the bed is of such a shape as to allow the patient to lie in a hollow. The buttocks should be elevated and the head of the bed raised.

After enunciating the commonly accepted doctrines as to the treatment of extravasation of urine, a case is cited in which twenty-four hours after this accident there was no sign of tissue-irritation. This was accounted for on the ground that there was almost complete absence of urea from the urine, and hence no ammoniacal decomposition. Brodie's dictum in regard to the sinister outlook when a black spot is seen on the enlarged glans penis is supported by two cases. The usual cause of extravasation in young male children is attributed to impaction of a calculus.

In the treatment of laceration of the urethra perineal section is advised, followed by union of the urethra by suture where this is possible. A case in point is quoted in which the patient recovered without stricture. Where a staff can be introduced this greatly simplifies operation. Where the urethra is completely torn across, the proximal end may be found by pressing over the pubis, and thus causing escape of urine.

Irritable bladder is referred to nervous erethism, habit, reflected action, structural disease, and abnormal states of the urine. Under this heading is considered that form of incontinence to which elderly persons are exposed, *i. e.*, the involuntary escape of drops of urine in connection with such movements as laughing. Tincture of cantharides in two- or three-drop doses three times a day and long continued is recommended for this.

The effect of frequent urination upon the ureters and pelvis of the kidneys is pointed out. In the treatment of bleeding from the bladder injections of hot water are advised.

Urinary tuberculosis is stated to be distinctly hereditary and to develop at the period of adolescence and vigorous manhood. The disease may travel downward from the kidneys or upward from the testes. When it descends from the kidneys it is nearly always associated with hæmaturia, frequent micturition, and excess of or change in the ordinary mucus. In its earliest form as it attacks the kidney it is not infrequently found to be a cause of incontinence and urinary irritability in children. Where the disease is suspected the thermometer may prove of service in making a diagnosis. Cystotomy, when undertaken solely with the object of relieving the intense reflex irritation which often attends the deposit of tubercle in the urinary apparatus, is generally a failure. It is justifiable only when it is undertaken for the purpose of drainage. The treatment is that generally appropriate for tuberculosis: morphia for the relief of irritation, iodoform suspended in mucilage for irrigation of the bladder, and removal of the infected foci when they are accessible.

The prostate is regarded as a urinary rather than as a sexual organ, its muscular structure being considered of paramount importance. Follicular prostatitis is said to be common, and its symptoms closely simulate inflammation and suppuration around the membranous part of the urethra, and inflammation and plugging of the veins constituting the prostatic plexus. In the treatment of prostatitis leeches are advised, with copious injections of warm water into the bladder by means of a syringe and a soft-rubber catheter. Gouty prostatitis is discussed at length. One case of organic stricture of the prostate is reported, due to an injury by the sound.

In the treatment of enlarged prostates not much confidence is expressed in drugs. It is pointed out that a certain amount of residual urine is practically innocuous, provided that it is neither excessive nor deteriorated and irritating. Hence it is safe in certain of these cases to refrain from artificial aid. When there is distinct irritation the catheter is ordered, the bladder being emptied gradually when it has been overdistended, and the residuum cleansed with 1 : 10,000 bichloride, which is injected after each partial evacuation.

In the treatment of sudden retention of the urine by obstructing prostatitis Harrison holds that the long prostatic metal catheters are dangerous instruments and are seldom required, the English gum-elastic catheter, with hard stylet and made somewhat longer than usual, generally sufficing. When catheterism fails the aspirator may be introduced with impunity again and again. After the catheter has been passed in difficult cases it is best secured by a thread tied to it, and secured by adhesive plaster wound around the penis. It should be drained continuously into a urine bottle placed between the patient's thighs.

In dealing with advanced forms of prostatic obstruction, puncturing the prostate through the perineum is advised, one case of radical cure being reported from this operation.

After perineal prostatotomy large drainage-tubes are applied of such size as entirely to fill the wound and thus stop bleeding. The tube is retained for six to twelve weeks. It is then removed, when a sound can be introduced along the natural passages. The sound is passed until the perineal wound is healed. Harrison has operated by the perineal route in thirty-five cases, in eighteen of these through the floor of the prostate so divided, or a portion of it was removed before the drainage-tube was inserted. In the remainder the perineum was merely opened for the introduction of the tube and its retention in this position.

But three deaths immediately followed this operation. The percentage of permanent cures was extremely gratifying. The value of the suprapubic method in approaching the prostate is fully discussed. The preference is evidently given to the perineal route.

In the treatment of cystitis, blackberry tea prepared from the jelly, is recommended as an efficient and not disagreeable emulsent. Celery is commended for the relief of extreme irritability. Intravesical injection of a solution of morphia, made with a gum-elastic catheter, is said to be more efficacious in securing rest than rectal suppositories. Of the solutions employed in washing out the bladder in cases of chronic cystitis, carbolic acid, boroglyceride, and sulphocarbolate of soda are commended. Quinine-wash is especially indicated when the urine is purulent—two grains of the neutral sulphate to the ounce of distilled water. When, after cystitis, the urine remains alkaline, five to ten grains of citric acid in a pint of warm water should be given by injection. Bismuth is especially commended. Bichloride is said to be curative in the strength of 1:20,000 in certain cases of tubercular ulceration. For rupture of the bladder the drainage-incision should be that customarily made for lithotomy.

Some interesting experiments in regard to ocular inspection of the bladder through the perineal opening are detailed in a lecture on surgery of the kidneys and ureter. The chapters on urinary calculus are particularly full and precise, and are illustrated by many cases. Tumors of the bladder are somewhat hastily gone over. There is one lecture upon the treatment of varicocele and spermatorrhœa. The final lecture is devoted to malformations of the genital organs, to cystocele, circumcision, and hydrocele, a group which seems scarcely sufficiently related to be placed together.

It is not in a spirit of fault-finding that the reviewer closes this book with a feeling that though it is entertainingly written and clearly expressed, and represents the results gained in an enormous experience of the class of cases described, it is somewhat discursive, is too freely illustrated by cases, is not clear-cut in its opinions, and is not sufficiently detailed in its teachings to be of use to the student or general practitioner. Notwithstanding these defects, there is so much sound common-sense based on large experience that the book is simply invaluable to all who are working in this special line of surgery. It is worthy of note that credit has been most generously afforded to the work of American surgeons.

E. M.

METHODS OF OPERATING FOR CATARACT AND SECONDARY IMPAIRMENTS OF VISION, WITH THE RESULTS OF FIVE HUNDRED CASES. By SURGEON CAPTAIN G. H. FINK. London: J. & A. Churchill, 1894.

THE first part of this interesting brochure deals particularly with the methods of operating for cataract, and is based upon Captain Fink's extensive experience as an operator, more than a thousand extractions having occurred in his service in India. Five hundred of these are tabulated in the present work, 196 eyes having been treated by the double operation, with the following result: Success, 90.6 per cent., accidents and complications 6.6 per cent., loss by suppuration 2 8 per cent.

The knife is entered "at the junction of the upper with the middle third of the cornea, at the corneo-sclerotic junction;" and, after counterpuncture, is made to follow the curve of the cornea with as little seesaw motion as possible. The incision is finished at the upper extremity of the vertical axis of the cornea.

Captain Fink performs iridectomy with large nuclear and some striated and black cataracts, and when there is haziness and irritability around the edge of the cornea, leucoma, increased tension, or prolapse of the iris over the knife during its passage through the anterior chamber.

Fluid or soft cortical cataracts are extracted without capsulotomy, and the same method is pursued in exceptional cases with nuclear, striated and black cataracts. The advice is given to try to deliver the lens "without lacerating the capsule; and if it come away easily, well and good; if not, you prick it with the cystotome, and the immediate effect of this, if done according to Tweedy's method (laceration at the periphery), is to produce an increased dilatation of the pupil. . . ."

The remainder of this part of the book is taken up with a description of the accidents which may occur during cataract extraction, the after-treatment, and the tabular record of five hundred cases of cataract operated on by linear extraction with iridectomy, the results of which have previously been given. Captain Fink strictly attends to all proper antiseptic details.

The second portion of the brochure describes "laceration of the hyaloid membrane for secondary impairment of vision, after a successful operation for cataract had been undertaken." Captain Fink was led to this procedure by noticing that in a certain number of cases the patient was unable to see immediately after the performance of the most perfect cataract extraction, and that oblique illumination revealed the centre of the pupillary area occupied by a deep haziness which when touched by the cystotome at once gave way to a jet-black appearance, to be followed by the immediate restoration of vision. What has been accomplished under these circumstances is laceration of the hyaloid membrane, which, for reasons not always understood, has become opaque and deserves, according to Captain Fink, the name of "hyaloid cataract." He makes a sharp and very proper distinction between the posterior capsule and the hyaloid membrane. The immediate division of the former structure has several times been advocated, and recently by Dr. Fox, of this city; but Fink's operation appears to be reserved for special cases of opacity in the hyaloid, which have often been assigned, he thinks, "to the category of deep nervous or other mischief of the inner tissues of the eye." He urges this operation very strongly, and has no bad results to report.

Captain Fink seldom performs the secondary operation for cataract; and when pieces of cortex remain behind he has faith in the use of gray powder, Dover's powder, and iodide of potassium as absorbents, although he warns against the danger of conjunctival hyperæmia and ptyalism if they are used too freely.

This book will be read with interest by all those concerned with ophthalmic surgery as an acceptable account of an extended experience in the Indian medical service. G. de S.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,
PROFESSOR OF CLINICAL MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO ST. MARK'S HOSPITAL.

Acute Gonorrhœal Rheumatism.

Dr. Howard Lilienthal has a preference for oil of wintergreen and sodium bicarbonate, with considerable attention to the alkalies, in the treatment of this disease. The diseased joint should at once be put at rest upon a splint of such proportions that as much comfort as possible may be obtained. Gentle compression over a dressing of ichthyol ointment twenty to fifty per cent., or over mercurial ointment, or over an ordinary wet dressing, should be applied by bandage. If the disease seems to be manageable, gentle massage is valuable during convalescence; but if ankylosis is inevitable, it should be assisted by perfect fixation in plaster-of-Paris. The indication is for forced feeding: meat, eggs, milk and its preparations, besides other simple and easily digested food, should be forced upon the patient every two hours or oftener, and accurate record should be kept of all nourishment taken.—*Boston Medical and Surgical Journal*, 1895, vol. cxxxii. p. 75.

Notes on the Newer Remedies.

Dr. David Cerna, in the second edition of his book of two hundred and fifty pages, presents an alphabetically arranged *résumé* of current literature concerning the newer acquisitions to materia medica. Although many of the drugs which are described in this work are already familiar to the readers of this department of The Journal and others are pharmacopœial and therefore are sufficiently well treated of in the text-books upon therapeutics, yet this volume is useful because one will find therein, in convenient form, many facts which would necessitate the search of a considerable portion of medical literature. While, in general, careful discrimination has been used to include only those remedies which have already proved their usefulness or give fair prospects of possessing valuable properties, it is quite likely that many will be shown to be unsuccessful candidates for professional favor. The author is usually accurate, although in a book which is chiefly a compilation errors are liable to creep in. We would instance as one the dose of creosote carbonate (p. 80), and in this case the doses in the two systems do not agree. The book is convenient for reference, and is likely to be acceptable to the practising physician.

ARISTOL.

DR. HEUSE recommends the use of this remedy in powder-form for indolent corneal ulcerations with suppurating base. It is thickly applied with a brush and the eye kept closed for a little time. In two days the base of the ulcer becomes clean. In a five per cent. ointment it is useful in ulcerative blepharitis, being preferable to the ointment of yellow precipitate on account of its causing less irritation. This ointment has given good results in obstinate, recurring hordeola when rubbed into the edges of the lids at night.—*Therapeutische Monatshefte*, 1895, Heft 2, S. 85.

SALOL IN NON-PARASITIC SYCOSIS.

DR. J. ABBOTT CANTRELL reports three cases, certainly with curative effect in one, the others only benefited for a time. Twenty to forty grains to the ounce of petrolatum were employed.—*Therapeutic Gazette*, 1895, No. 2, p. 80.

PETROLATUM MOLLE.

MR. LYMAN F. KEBLER has examined nine samples, applying the tests of the *U. S. Pharmacopœia*. All but one was of a higher melting-point, four became opaque with sulphuric acid, one possessed a decided taste and odor. Contrary to what has recently been claimed, that this article is highly adulterated with fatty substances of both animal and vegetable origin, no chestnut-brown coloration was detected on treating with potassium permanganate, nor was any saponifiable matter found.—*American Journal of Pharmacy*, 1895, No. 3, p. 142.

[Although the common adulterations were not found, yet it should be noted that but one of the specimens, and that one not entirely, conformed to the official requirements.—R. W. W.]

POISONING BY NUTMEGS.

MR. T. G. SIMPSON reports that a strong, healthy woman, twenty-six years of age, being a week over her menstrual period, took two nutmegs, bruised, in a small quantity of gin. She was found lying upon the bed in a drowsy condition and very delirious, the delirium taking the form of confusion and mistaking one person for another. There were fairly lucid intervals. She complained of a sensation of great tightness across the chest, of vertigo, and faintness on attempting to stand. She had vomited several times. The pulse was 75 and rather feeble, as was also the heart's action. The pupils were normal. She was kept in bed, and strong coffee with a dessertspoonful of brandy given every half-hour. A mixture of potassium bromide, ammonium carbonate, spirit of cajuput, and chloroform-water every four hours was prescribed. Convalescence was established on the second day following, but the nutmegs had no effect whatever in producing a miscarriage.—*The Lancet*, 1895, No. 3725, p. 150.

ASAPROL IN PEDIATRICS.

DR. MONCORVO has found that in healthy infants this drug does not have any appreciable influence upon temperature, pulse, or respiration. No complaints have been made of its taste, nor has it given rise to any diarrhœa, cerebral manifestations, vertigo, or noises in the ears. In two cases, of small infants of very nervous temperament, it gave rise to an erythema, situated upon the body, and which disappeared two days after the discontinuance of the drug. It possesses analgesic properties. In many cases it increases the quantity of urine, notably in cases of malarial fever. If albuminuria exists, it does not seem to increase the amount in the urine. A property which has not been hitherto ascribed to the drug is that of checking hemorrhage, of which seven instances are cited. The remedy is given in from four to forty-five grains in the twenty-four hours, in sweetened water, to which is added syrup of tolu, gooseberries, or canella. For lotions or irrigations it is dissolved in water (1 to 5 to 100). For applications to the skin, nasal or pharyngeal mucous membrane it can be used with vaseline, to which may be added lanolin. In malarial fever this remedy is without doubt efficacious, lowering the temperature and modifying more or less rapidly the type of the fever. It lessens the malaise, nervousness, and insomnia, and the hepatic or splenic congestion. It sometimes gives rise to a profuse perspiration, but less than that excited by such drugs as antipyrin. In acute tuberculosis it seems incapable of efficiently acting as an antipyretic. In broncho-pneumonia the cases were too few for the expression of a decided opinion. In whooping-cough, when used as a application (1 to 100 of water) several times daily to the region about the glottis, relief almost without exception followed. As a topical application in cutaneous maladies and in diseases of the ear, nasal fossæ, throat, and valvo-vaginitis it is as useful an antiseptic as it is in the intestine. The morbid secretions stop, they become devoid of odor, and healing takes place.—*Bulletin Général de Thérapeutique*, 1895, 10e liv., p. 194; 12, p. 256; 14, p. 308; 16, p. 356.

THE TREATMENT OF URIC-ACID GRAVEL.

DR. VAUGHAN HARLEY states that the treatment takes two directions, according as we desire to increase the solubility or decrease the amount of uric acid formed. In the majority of cases uric-acid deposits are due to an increased tendency to precipitation, and not to excessive formation. In cases due to an increased tendency to precipitation drugs which help to hold uric acid in solution should be given. Piperazin has been found to be of service in those cases in which gravel has been due to diminished solvents and not to excessive formation, but it has no action whatever on the quantity of uric acid daily formed in the organism. In such cases it should be given with alkalies, as the alkaline waters or potassium bicarbonate, combined with the iodides, and the alkalies should be given at bedtime. Here the diet is not of so much importance except in favor of salines and vegetables. If there is excessive formation, a carbohydrate diet is the most useful. Starch, sugar, and vegetables should, therefore, be the staple diet, and meat and fish in only small quantities. Sugar does not cause an increase of uric acid, but alcohol does, and therefore should be prohibited. Quinine and arsenic decrease the quantity of uric acid, because they diminish the quantity of leucocytes, and, therefore, in cases where gravel is due to excessive formation of uric acid they are most valuable. While moderate muscular exercise is of service, excessive exercise is harmful. In cases of excessive formation, although alkalies are of some assistance, they, like piperazin, are of only secondary importance by increasing the solubility of the uric acid formed.

Dr. Alexander Haig states that an arthritis can be produced when (1) there is a considerable excess of uric acid in the blood, in solution probably with some salt of potassium or sodium, and (2) there exists some condition unfavorable to solubility of uric acid so that it is precipitated in the joints. Mineral waters will often, as their first effect, precipitate an attack of gout because the first condition is present and the ingestion of the water brings about the second. But when this attack has passed over, and the absence of the urates continues, and from the use of the water there is a general stimulation of nutrition and metabolism throughout the body, and the blood is kept clear of urates for a considerable time, the gout is said to be cured. A meat-diet, if it is well digested, and if the patient is young enough to have his nutrition stimulated by it, will produce an absence of urates from the blood, and so long as it continues to do so there will be no arthritis. An excess of uric acid is being introduced, but it does not remain in the blood because the conditions are unfavorable to its solubility. Hence a meat-diet may prevent rather than produce an arthritis. Unfortunately, however, some patients are too old, others are already too feeble and wasted to respond to any stimulus, and others may at first respond to the stimulus of meat-diet, and later, from old age or other causes, fail to do so, and then their blood will become a good solvent of uric acid, and the urate which they have been previously introducing in meat-diet, or retaining with drug or mineral waters, will come through their blood and produce all the worst effects of severe uric acidæmia. For this reason the other way out of the difficulty is decidedly the better of the two ; that is, to prevent the production of an excess of urates in the blood by diminishing the intake and formation of uric acid.—*British Medical Journal*, 1894, No. 1786, p. 637.

Dr. Benoit du Martouret presents an argument for the use of baths of dry vapor of fresh pine-shavings from the species Mugho. The results claimed are the active elimination of uric acid, which takes place from the elective action upon the kidneys which the balsam possesses. The phenomena of increased oxidation appear to be due to cinnamic and benzoic acids, which by their combination under the form of hippuric acid prevent the formation of uric acid. It is also claimed that the elimination of uric acid by these baths is greater than by the mineral-water treatment, and that it can be a specific in the diseases of the kidneys.—*Bulletin Général de Thérapeutique*, 1895, 16e liv., p. 347.

The Treatment of Typhoid Fever.

Dr. W. Gordon M. Byers reports twenty-two cases treated by Yeo's mixture. This mixture is practically a solution of chlorine, generated from potassium chlorate and strong hydrochloric acid in water, to which are added quinine and syrup of orange-peel. In addition a calomel or other purge is given in the initial stage of the fever, if diarrhœa does not exist; the large intestine is washed out twice daily with naphtholated water; feeding is carried on so that there is no bulky residue; an intestinal antiseptic is administered at the same time as the food. Antipyretics are objected to, but phenacetin in five-grain doses may be used. Tea and coffee, as cardiac stimulants, have been too much neglected, the general tendency being to give alcoholic stimulants too early and in too large quantities. In the cases reported, the washing of the large intestine was not carried out, antipyretics were not used, and stimulation by alcohol was found to be necessary in eight of the cases. As results, it was noted that the lips and tongue remained moist and the gums free from sordes, perhaps attributable to the careful cleansing by the nurses. The effect upon the alimentary excretion was very marked; in the great majority of cases the odor was much diminished, and in not a few cases there was absolutely no odor, although in a limited number the stools seemed to be unaffected by treatment, but in only one instance could the odor of chlorine be detected. Although three of the patients had well marked hemorrhages, perforation was the cause of death in but one of the two fatal cases, and this patient did not enter until the twenty-second day of the disease. So far as the course of the fever was concerned, the results varied greatly: in some instances there was a sustained depression of the febrile temperature, in others the fever ran its cycle quite uninfluenced by the treatment. In certain cases, seen early, the duration of the fever seemed to be shortened. But few signs of "febrile intoxication" presented themselves; the mind in the great majority of cases was clear and bright throughout the entire course of the disease; the patients for the most part rested quietly during the day and slept well at night. Nor did the cases present that degree of emaciation and pallor which is present late in the disease, some retaining their color all through and comparing more than favorably with cases under the bath treatment in the same ward. Although it was commonly remarked, and in special cases seemed very apparent, it would be difficult to show certainly that these patients convalesced more rapidly than others under different treatment.—*Montreal Medical Journal*, 1895, No. 10, p. 721.

The Treatment of Cardiac Disease.

Dr. William C. Krauss believes that in strychnine we have an ideal cardiac stimulant, which not only acts upon the circulation, but as well upon respiration, digestion, and assimilation. It is especially indicated in the weak heart of pneumonia and febrile processes, given hypodermatically in $\frac{1}{30}$ to $\frac{1}{10}$ grain doses, repeated until some sign of the drug is manifested. It is also useful to relieve the alarming symptoms which occur in surgical anæsthesia, in the cardiac weakness often associated with neurasthenia, and in that due to depressed nerve-force. Strophanthus is of great value as a cardiac sedative in that form of tachycardia so common in exophthalmic goitre. These two drugs will retain their supremacy because of their influence over the vital centres in the medulla, to which the various systems of the body look for support and encouragement.—*Therapeutic Gazette*, 1895, No. 5, p. 293.

THE TREATMENT OF CHLOROSIS.

DR. G. HAYEM prescribes rest, regulates the diet, and makes use of iron. Rest in bed is of the greatest importance and should be absolute in severe cases. This rest opposes the destruction of the red blood-corpuscles and checks a waste of iron, which is not compensated for by that absorbed. For this reason the patients are more easily cured in the hospitals than at home. Besides, rest in bed relieves the neurasthenia, calms the nervous irritability, regulates the digestive processes, and in abolishing the corset removes a frequent cause for dyspepsia. When patients again go about they should wear a flexible and elastic corset. Before prescribing iron it is necessary to relieve the dyspepsia. At first a milk-diet and underdone meat, later eggs and fish and green vegetables in soup and stewed fruits, may be added. Bread should be allowed only at the end of four or five weeks. Iron, either as the carbonate (Blaud's pills) or the oxalate, should be given at the beginning of the meal and hydrochloric acid a half-hour afterward.—*Journal des Praticiens*, 1895, No. 17, p. 265.

THE TREATMENT OF MALARIAL HÆMATURIA.

DRS. H. A. HARE and WILMER KRUSEN present the results of a collective investigation, based upon one hundred and seven replies to questions which were sent out, the area covered being that having a death-rate from malaria of 70 per cent. or over. Thirty-two remedies were used: the first six were calomel, tincture of ferric chloride, arsenic, ergot, turpentine, and sodium hyposulphite, each remedy being used by ten or more physicians. Calomel is used in from 5 to 50-grain doses and seems to be most in favor. Tincture of ferric chloride is used either alone or combined with arsenious acid or small doses of quinine. Arsenic is recommended in from 1 to 5 drop doses (Fowler's solution), the only caution stated is that the urine shall be clear. Sodium hyposulphite may be given in from 20 to 40 grains every three hours after thorough purgation with calomel. Ergot is regarded as a hæmostatic. Turpentine, in capsule, ten drops every three hours until the urine clears, and a turpentine liniment in the lumbar region, may arrest renal hemorrhage.—*Therapeutic Gazette*, 1895, No. 5, p. 291.

ANTI-TUBERCLE SERUM.

DR. PAUL PAQUIN believes that tuberculosis in the stage of lesions, particularly when pulmonary cavities, intestinal ulcers, or other such alterations exist, becomes a mixed infection, due to the introduction of various other pathogenic microbes, besides the bacillus of tuberculosis in the specific wound. The serum is prepared from horses which have been rendered more strongly refractory to the action of the bacillus of tuberculosis than they are normally. To obtain this immunity proper toxines are used. The treatment is begun with the subcutaneous injection of ten drops in the back between the shoulder-blades. In a few days the dose is increased to twenty, and then by ten drops to sixty drops once a day. In a few instances one hundred and fifty drops have been injected every day for several days. No reaction follows, and the pain is no greater than after the usual injection of morphine. Horse blood-serum in its natural state is feebly antagonistic to the germs of tuberculosis, being too slow and requiring enormous quantities, but it can be made strongly antagonistic to these germs by proper treatment. If a horse is properly treated, three months may yield serum with immunizing power which will probably prove sufficient to arrest consumption in the first stages in three or four months and sometimes in less time, and in the second stage in four to six months.—*St. Louis Medical and Surgical Journal*, 1895, No. 651, p. 137.

MEDICINE.

UNDER THE CHARGE OF

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AND

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A Unique Case of Hydatids of the Liver.

At a recent meeting of the Medical Society of Victoria Ryan (*Australian Medical Journal*, vol. xvi., No. 11, p. 513) reported the case of a youth, seventeen years old, who presented enlargement of the liver, with distinct bulging in the region of the gall-bladder. There were also loss of flesh, jaundice, constipation, with clay-like stools, and discolored urine. In view of the gravity of the condition an exploratory operation was contemplated. As a preparatory step the patient was first purged and a large quantity of bile was passed in the stools, and with it a number of hydatid cysts as large as grapes. The patient at once improved and operative interference was for the time abstained from.

Some four months later symptoms similar to those previously present began to appear. Operation was again recommended, but, in view of the results obtained on a former occasion by free purgation, this was again resorted to, but found to exercise no beneficial effect. Accordingly, celiotomy was undertaken, the abdomen being opened by a vertical incision four inches long, some distance to the right of the abdominal line and over the most prominent part of the swelling. A portion of the anterior surface of the liver presented in the wound and appeared uniformly smooth and free from bulging or prominence. Careful exploration of the upper and lower surfaces of the liver and the adjacent regions was made with the hand, but no abnormality could be detected. The sides of the wound having been carefully packed with sponges, several exploratory punctures were made in the surface of the liver with a long trocar, but without result. The organ was then incised to the extent of two inches, the incision being gradually deepened, but without exposing any morbid condition. There was free bleeding, which was controlled without difficulty by means of pressure with the fingers and with sponges.

The second case occurred in a man, twenty-five years old, who was suffering with an attack of specific urethritis, which was followed by swelling of the knee-joints and ankle-joints. There was complaint of pain, not only in the affected joints, but also in the præcordium. On physical examination the area of cardiac percussion-dulness was found to be normal, but a faint blowing-murmur was hear over the aorta, and at the apex a rough murmur that was transmitted to the back. Under treatment with sodium salicylate and the application of cold the symptoms soon improved, so that in the course of six weeks the right extremity presented a normal appearance, while the left remained swollen, and so continued for a considerable time after the patient was able to be out of bed.

Additional exploratory punctures were made into the liver by means of a long trocar, some through the abdominal wound and others through the intercostal spaces, but neither hydatid fluid nor pus was withdrawn from any part.

The question of incising the gall-bladder and attaching it externally was considered, but the procedure was found to be impossible on account of the great depth at which the organ was situated. The operation was concluded by washing out the abdominal cavity, and suturing with carbolized silk the incision in the liver to the sides of the abdominal wall.

About a week after the operation a few more cysts were passed by the bowel; the general condition had improved, the jaundice was less marked, the urine lighter in color, and the stools less clay-like in appearance. The abdominal wound was less distended, and there was some reduction in the size of the liver. There was almost entire freedom from pain, with an absence of vomiting, and a sufficient amount of nourishment was readily taken.

At the end of a month the patient was able to sit up. For ten days after the operation the abdominal wound was free from suppuration. Subsequently a small amount of pus was always present. The drainage-tube was kept in place for two weeks, but only for a few days was there any discharge of bile through it.

Despite the temporary improvement and the large amount of nourishment taken, the patient steadily lost flesh and strength, and died of exhaustion six weeks after the operation. Upon post-mortem examination the liver was found adherent to the abdominal wall about the wound, as well as to the stomach, and to be greatly enlarged, weighing six and one-quarter pounds. On section it was found to be riddled with abscesses. The gall-bladder was shrunken, the cystic duct being occluded with cretaceous-looking matter, supposed to be cholesterin. The remaining viscera, as well as portions of the tissues, were examined, but no hydatids were found.

It is believed that the sequence of events was as follows: Hydatids of the liver with suppuration; the formation of adhesions between the liver and the colon, through an opening in which (which escaped observation post mortem) the cysts escaped. It is further suggested that the multiple abscesses may have been due to the numerous exploratory punctures made at the time of operation.

BILATERAL FACIAL PALSY IN THE SEQUENCE OF INFLUENZA.

BARKES (*Lancet*, No. 3726, p. 217) has reported the case of a medical man, thirty-six years old, who resided in a district which was extremely cold and bleak in winter, and whose brother and father had had attacks of facial palsy. Several weeks after an attack of influenza, at a time when the weather had become extremely severe, the man noticed paralysis of the muscles supplied by the facial nerve, first upon the left side and a day later upon the right. For two days before the paralysis appeared an absence of taste was noticed, but this may have been due to the condition of the surface of the tongue. Sensibility was everywhere preserved. The facial nerves were tender on pressure at their point of exit. Under energetic treatment, improvement speedily set in and progressed to ultimate recovery.

THE PREPARATION OF THE ANTITOXIN OF DIPHTHERIA.

With a view to shortening the time required for the preparation of the antitoxin of diphtheria by any of the methods thus far employed, KLEIN (*Lancet*, No. 3720, p. 1415) makes a few injections of living diphtheria-bacilli attenuated by age, together with their toxin. The animal treated is thus furnished with a certain degree of resistance. Next, large quantities of living diphtheria-bacilli (minus their toxin), taken from the surface of solid cultures of gradually increasing virulence, are repeatedly injected subcutaneously, so as to allow the bacilli to grow and multiply and gradually to produce within the body of the animal the toxin, and ultimately the antitoxin. Each injection is followed by a temporary reaction, a rise of temperature varying between 0.6° and 1.8° C., and a local tumor; but there is no suppuration at the site of inoculation. As soon as one such tumor has disappeared a new injection is made with large quantities of living bacilli scraped from the surface of solid media (agar and gelatin). By the third week the animal will bear the scrapings from the surface of two whole agar-cultures of virulent character. In the case of one horse, antitoxic serum was obtained by this method in twenty-three days, and in that of another in twenty-six days from the date of the initial injection. If after the first bleeding the horse be again twice or thrice injected with virulent living diphtheria-bacilli (taken from surface-cultures), the further serum obtained will be found to possess increased antitoxic power.

APYRETIC TYPHOID FEVER.

The designation apyretic typhoid fever ought to he reserved for cases in which the temperature remains normal or below throughout the course of the attack, in the absence of collapses, although there may be transitory elevation as a result of complication. All other symptoms may be present as in a typical case of typhoid fever. Should the temperature rise to 100.4° F. during the first two or three hours, it later oscillates between 97.2° in the morning and 99.5° in the evening, without other variation not due to complication. The pulse is variable; sometimes it is slow, more often it is normal; occasionally it is increased in frequency. It is difficult to recognize the different stages of the disease, as these are usually indicated by the course of the temperature-curve. Convalescence is sometimes protracted, the patient remaining feeble and emaciated for a long time. The same complications may arise as occur in the ordinary course of the disease. Exceptionally, cases of typhoid fever occur in which the temperature is throughout subnormal. In these the temperature-curve is usually of the inverted type, the records being highest in the morning and lowest in the evening. From a diagnostic point of view importance is to be attached to the presence of enlargement of the spleen and of rose-spots. In explanation of these apyretic forms of typhoid fever it is assumed that elimination of the infectious elements of the disease by the kidneys is imperfectly effected, and recent experimental studies have shown that the urine of patients with typhoid fever at times contains toxic bodies capable of causing depression of temperature. It is suggested that in some cases there is a preponderance in the products of the activity of the typhoid bacillus of substances capable of causing such depression. Therapeutically, the absence of fever affords no special indication. Antipyretics—salicylic acid, quinine, antipyrin, thallin, etc.—have been found to cause elevation of temperature. Quinine seems to have been used to the best advantage.—*L'Abeille Médicale*, 1894, No. 50, p. 399.

The Pathological Anatomy of Diphtheritic Paralysis.

Preisz (*Deutsche Zeitschrift für Nervenheilkunde*, 1895, No. 6) describes the changes found in the spinal cord and the peripheral nerves in three cases of diphtheritic paralysis, two being general and one localized to the pharynx and heart. The first case showed atrophy of the ganglion-cells in the anterior horns, hemorrhage in the gray substance, and degeneration in various peripheral nerves and in the anterior and posterior roots of the cord. There were also peculiar changes in some of the peripheral nerves, which the author thinks identical with alterations described by Kopp in the peripheral nerves of dogs after extirpation of the thyroid, and by Langhans in cachexia thyreopriva in men and monkeys. It is not yet known whether these interfere with the functions of the nerves. In another case there was extensive degeneration of the posterior root in the lumbar cord and in the left column of Goll, and a slight degeneration of the right column of Goll in the cervical portion, secondary to a focus in the posterior roots of the cervical and upper dorsal cord. There was also atrophy of the ganglion-cells of the anterior horn. In the third case the vagi and glosso-pharyngeal nerves were extensively degenerated; the phrenics and the intermuscular nerve-trunks of the palatal and pharyngeal muscles were less severely affected. In this case death occurred on the seventeenth day after diphtheria. From these results it appears that in general post-diphtheritic paralysis the central and peripheral nerves are affected simultaneously. The ataxias noticed in such cases are explained by the changes in the posterior roots and columns.

A GASTRIC EQUIVALENT OF MIGRAINE.

BARY (*Neurologisches Centralblatt*, 1895, No. 6, p. 251) reports a case which he thinks illustrates an "equivalent" of migraine in the sense of Liveing and Möbius, or a "nerve-storm" corresponding to an attack of migraine, but differing in its location. The patient was a woman, aged fifty-one years, with a family history of dementia and various neuroses. From her ninth year the patient had attacks of headache every three or four weeks, brought on by various irritations or spontaneously. The attacks varied in intensity up to the most severe, with the other symptoms of migraine. There was no aura. Suddenly, and without apparent cause, pain appeared in the epigastric region. It came on almost every day, sometimes several times in a day, lasting one or two hours and disappearing suddenly. Besides eructation at the end of the attacks there were no other symptoms on the part of the stomach or intestines. During three months, while this condition lasted, there was no headache, but after the epigastric pain suddenly stopped migraine again began. Two years later the headache again ceased for two months, and the epigastric pain reappeared for the same period. A son of the patient had mild attacks of migraine. As there was no evidence of stomach disease, or of hysteria or neurasthenia, and as the attacks alternated with those of migraine, the author thinks they can only be explained as above.

THE PERCENTAGE OF IRON IN THE LIVER IN ANKYLOSTOMIASIS.

As the result of a series of analyses, RAKE (*Journal of Pathology and Bacteriology*, vol. iii., No. 1, p. 107) found that in ankylostomiasis the average percentage of iron in the liver is less than in other diseases, and is very much less than the average percentage in pernicious anæmia. Thus, in ankylostomiasis it is 0.1 per cent.; in other diseases, 0.12 per cent.; and in pernicious anæmia, 0.7 per cent. The iron in the spleen is scarcely affected in ankylostomiasis; the intense anæmia associated with this condition is simply due to loss of blood from the intestine, and is not caused by any toxic blood-destruction in the liver.

HYSTERICAL SYNCOPE, HEMIANÆSTHESIA, AND RAPID BREATHING.

BURR (*University Medical Magazine*, vol. vii., No. 5, p. 334) has reported the case of a woman, forty years old, who, while submitting to an application of a 10 per cent. solution of cocaine to a sensitive tonsil, suddenly grew pale and lost consciousness, while the breathing became very shallow and the lips cyanosed. The heart was weak and fluttering, and the pulse scarcely perceptible. On subsequent examination it was found that the right arm and leg were perfectly analgesic, while the sense of pain was impaired, though not abolished, on the right side of the face. Common sensibility was also impaired in these same regions. Pressure upon the supraorbital and infraorbital notches and upon the seventh nerve on the right side of the face, and upon the great occipital nerve, was painful. The breathing was exceedingly rapid and shallow and of upper costal type, but regular. Its frequency varied between 48 and 60, and was subject to abrupt variations. An attempt to study the fields of color-vision was attended with loss of consciousness which could also be induced by pressure upon one of the tender points already mentioned; breathing at the same time apparently ceased entirely. The patient proved exceedingly susceptible to hypnotism, but not at all to suggestion. Careful examination failed to disclose the existence of organic disease of whatever kind.

The Pigmentation of Uric-acid Crystals deposited from Urine.

Garrod (*Journal of Pathology and Bacteriology*, vol. iii., No. 1, p. 100) has found that of the true urinary pigments that exist ready formed in the urine, only the normal yellow pigment (urochrome) and uroerythrin appear to possess the property of coloring uric-acid crystals deposited from their solutions. The yellow pigment, being a constant constituent of the urine, always furnishes the ground-tint of the crystals, and plays the more important part in determining their form; the whetstone or canoe-shape being that which this substance specially tends to produce. In the majority of instances uric-acid crystals, which are spontaneously and rapidly deposited from urine, contain uroerythrin also, and it is to this pigment that the sediments owe their red color when seen in bulk. The various shades of orange and red observed in the individual crystals are due to the admixture, in varying relative proportions, of the two pigments named; and although crystals colored by the yellow pigment alone are sometimes met with, uroerythrin is never the sole coloring-matter of the natural sediments. The minute quantity of iron present in the sediments is not a constituent either of the yellow pigment or of uroerythrin. Other pigments occasionally present in urine, which have a share in the coloration of the crystals in some cases, are the brown products resulting from the action of mineral acids, the oxidation-products of phenol derivatives, and the pigments of the bile. Urobilin and hæmatoporphyrin take no part in the coloration of the crystals.

Ulcerative Endocarditis in the Sequence of Specific Urethritis.

Winterberg (*Festschrift zum 25. Jaehr. Jubilaeum des Vereins Deutscher Aerzte zu San Francisco*, 1894) has reported the case of a man, twenty-five years old, who, in the course of an attack of specific urethritis, complicated by right-sided epididymitis and enlargement of the glands in the groin, was seized with a chill, followed by fever and general malaise, together with swelling of both elbow-joints. Rest in bed, together with the administration of sodium salicylate, was at once prescribed, but improvement failed to ensue. Cyanosis and dyspnœa set in, and speech became difficult and the sensorium obscured. There was general dulness on percussion of the chest, and moist râles were heard on auscultation, together with loud, blowing systolic and diastolic murmurs over the heart, especially in the aortic and pulmonary areas. The knees and ankles also became slightly swollen. The liver and spleen were enlarged, and the stools contained blood and the urine albumin. Death took place amid the signs of exhaustion.

Upon post-mortem examination both pleural cavities were found to contain a large amount of serum, compressing the œdematous lungs. The pericardial sac contained rather more than three ounces of sero purulent fluid. The heart was enlarged and the myocardium, which presented a grayish appearance, contained numerous purulent foci. The aortic and pulmonary leaflets were almost entirely absent, and replaced by friable caseous remains. The mitral and tricuspid leaflets presented similar changes, though not quite so advanced. The liver and spleen contained numerous small hemorrhages, and the kidneys had undergone amyloid degeneration. The small intestine was the seat of numerous ecchymoses. Peyer's patches were reddened and swollen, but free from ulceration. Microscopic examination of fragments of the cardiac valves disclosed the presence of gonococci.

RUPTURE OF AORTIC ANEURISM INTO THE SUPERIOR VENA CAVA.

BRUCE reports an interesting case of this somewhat rare condition in the *Edinburgh Medical Journal* for April, 1895. The patient was a male, aged fifty-seven years, a hard worker, with a previous history of alcoholism and lues.

He was admitted to the hospital with cough, cyanosis, and dyspnœa, the two latter symptoms having come on suddenly two days previously without any extra exertion on his part. On examination he was found to be cyanosed from the head down, the cyanosis ceasing at the attachment of the diaphragm in front and at the loins behind. The cyanosed area was œdematous, as were the upper extremities. The cyanosis of the face and right side of the thorax was particularly well marked, the left side of the thorax being free from lividity.

The abdomen and legs were neither œdematous nor cyanosed. Percussion of the chest showed extensive dulness from the clavicle down to the ensiform cartilage, and reaching laterally on either side from three to four inches outside of the mid-sternal line.

Auscultation over the base of the heart showed a peculiar murmur, continuous and swishing in character, and somewhat resembling a venous bruit. It was most intense during systole, and gradually died away during diastole, and was propagated best to the right of the sternum, having its greatest intensity over the sternum at the level of the third costal cartilage.

Seven days after admission the patient, who had remained in about the same condition, had a sudden attack of cyanosis, and the next day the maximum intensity of the murmur was noted to be opposite the second costal cartilage.

The patient gradually grew feebler and more cyanosed, and died eighteen days after admission.

The autopsy showed a large saccular dilatation of the aorta reaching from the valves to the origin of the innominate; on its right and posterior aspect were found two perforations about three-quarters of an inch apart.

Dr. Bruce inclined to the opinion that the sudden attack of dyspnœa, and the subsequent change in the position of the maximum intensity of the murmur, were due to a second perforation, as one of the openings seemed much fresher than the other. The condition is fully described in Pepper and Griffith's study of varicose aneurism of the aorta and vena cava (AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 1890).

MENINGITIS DURING ERYSIPELAS.

ROGER (*Revue de Médecine,* April, 1895), in an article on pneumococcus infections in erysipelas, points out that though we are apt to regard most of the infections secondary to this disease as secondary streptococcus localizations, they are really relatively frequently due to other organisms.

He reports three cases of meningitis occurring during the course of facial erysipelas, in all of which the pneumococcus was the predominating organism in the meningeal exudate, though in two cases the streptococcus was also present in small numbers. In all the cases there was lung-involvement also, one of the lower lobes being consolidated and the pneumococcus being found in cultures therefrom.

In speaking of the symptoms the author states that in two cases out of the three they were too slight for diagnostic purposes, consisting only of delirium and incontinence of urine and feces. One case showed the typical signs of meningitis.

Roger is inclined to regard these cases as auto-infections, as he has no evidence of extension by infection from other cases, and he calls attention to the fact that Netter has shown that virulent pneumococci can be isolated from the sputa of quite a large proportion of convalescent erysipelas cases.

A CASE OF SYRINGOMYELIA WITH ARGYLL-ROBERTSON PUPIL.

LÉVI and **SAUVINEAU** (*Société de Biologie,* April 12, 1895) report an interesting case of syringomyelia in which the Argyll-Robertson pupil was one of the symptoms. The case presented the symptoms of muscular atrophy, changes in sensibility, and paralysis, with cutaneous trophic disturbances in the form of a bullous skin-eruption. Besides the ordinary signs of syringomyelia there were also present motor inco-ordination and loss of tactile sensibility. The authors leave the question open as to whether this is a simple syringomyelia or a syringomyelia combined with tabes, of which several cases have been reported.

The Argyll-Robertson pupil, they state, has never been observed so far in syringomyelia pure and simple.

Outside of tabes and general paresis, the Argyll-Robertson pupil has been observed unilaterally in hypertrophic cervical pachymeningitis, in cortical hemiopia, and in one case of high Pott's disease.

The authors do not pretend to locate the lesion causing the symptom in this particular case.

PSEUDO-MEMBRANOUS SORE-THROAT DUE TO OÏDIUM ALBICANS.

TESSIER (*Archives de Médecine Expérimentale,* March, 1895) reports a case of pseudo-membranous angina in which the only organism present was the ordinary thrush fungus.

The disease occurred in a female, aged twenty-three years, who had been treated for secondary lues. The patient was taken suddenly with chill, slight fever, malaise, and anorexia. The next day she complained of sore-throat and pain on swallowing, and examination showed two white patches, which had not previously existed, on the anterior pillars of the fauces. The membrane was in the form of a moderately thick pellicle similar to the eschar formed by cauterization with nitrate of silver.

Posterior to the patches, on the tonsils, mucous patches were to be observed on either side.

The membrane presented a certain amount of resistance, but was easily detached with a platinum needle, and on removal the surfaces presenting showed a similar appearance to the neighboring mucous patches.

Examination of both cover-slips and cultures showed the only organism present to be the oïdium albicans, which in the membrane itself lacked mycelium, but this developed on appropriate media.

The author concludes that the oïdium can be infective, and points out the fact that Grasset was able to produce suppuration by inoculating it subcutaneously into a rabbit.

THE COEXISTENCE OF TRUE LEUCOCYTHEMIA AND CANCER.

LANNOIS and **REGAND** (*Archives de Médecine Expérimentale*, March, 1895), after remarking on the rarity of the coincidence of these two diseases, record a new case. The patient was a female, aged fifty-eight years, who for the three preceding years had had some glandular enlargement, and for two years had had uterine symptoms.

Physical examination showed an epithelioma of the cervix uteri and very marked general glandular enlargement, accompanied by enlargement of the liver and spleen. Examination of the blood showed a proportion of one white to twenty-five red corpuscles, the white corpuscles being chiefly of the small mononuclear variety.

The patient gradually sank, and died with fever about six weeks after admission.

The autopsy showed general enlargement of the lymph-glands, with enlarged liver and spleen and carcinoma uteri. The histological examination of the glands showed simple hyperplasia and no signs of carcinoma; the liver and spleen showed the changes usually associated with leukæmia. The uterus showed carcinoma of the alveolar type. Bacteriological examination showed a general streptococcus infection, the organism having penetrated even into the lymph-glands, though the authors regard this as secondary, and do not claim any connection between the infection and the blood-changes.

HYDATID OF LIVER INFECTED WITH PNEUMOCOCCUS.

GALLIARD (*Presse Médicale*, April 20, 1895) has reported the case of a man of fifty years, who entered hospital for symptoms of intestinal obstruction. He had violent pain in the right hypochondrium, the liver was enlarged, and the diagnosis of hepatic colic was made, as for two days he had had slight icterus with colorless stools.

The pain in the lower region gradually disappeared, the swelling still remaining, and high fever developed; puncture withdrew pus which was not bile-stained.

An incision later showed numerous hydatids and a pure culture of the pneumococcus in the fluid. The man gave no history of a previous pneumonia.

OTOLOGY.

UNDER THE CHARGE OF

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Rupture of the Membrana Tympani from Violence.

Dr. William E. Hopkins, of the San Francisco Polyclinic, reports a case of the above-named nature, the accident being due to the foolish practice of striking the ear to dislodge water which may have entered during bathing. Such a self-inflicted slap over the auricle not only ruptured the membrane, but forced cold water from the auditory canal into the middle-ear, setting up violent otitis media, with pain and serous discharge (*Pacific Medical Journal*, San Francisco). In such a case it is contrary to the canons of aural surgery to instil anything into the ear. It is necessary only to stop the meatus with iodoform-gauze, and let it alone.

Aspergillus Flavescens in the Auditory Canal.

In a case of this disease, reported by Dr. O. D. Pomeroy, of New York (*American Medico-Surgical Bulletin*), it is shown that strong solutions of nitrate of silver and even alcohol are insufficient to destroy the fungus. Instillations of liq. sodæ chlorinatæ, full strength, entirely destroyed the aspergillus in two days, with three daily instillations. We have never known insufflation of a powder composed of boric acid, 16 parts, and chinoline salicylate, 1 part, to fail to destroy aspergillus in the ear in one application.

Acute Otitis Media.

Only a few good articles on this subject have appeared during the past year. Chief among these is an article by Gradenigo and Pes (*Archiv f. Ohrenh.*, Band 38, S. 65). Nature shows us by the generally early spontaneous rupture of the membrana, in acute otitis media, in a previously healthy ear, what is best for the acutely inflamed drum-cavity, viz., the *escape* of the pathogenic micro-organism. Not only must this fact be kept in mind, but it must be remembered also that nature will further resent the entrance of fresh infectious germs from without. Therefore, not only should the exit of the pathogenic germs already in the middle-ear be promoted, but the surgeon should be careful *not to throw anything*, into the ear after either spontaneous or artificial perforation of the membrana tympani in acute otitis media. Most anything now put in the ear will be irritating or infectious. Even absorbent cotton twisted on the cotton-holder by the cleanest fingers is loaded with staphylococci, as is shown by Lermoyez and Helme (*Annales des Maladies de l'Oreille*, vol. xxi.), and may prove the source of secondary infection. It will be best to instil a few drops—10 at most—of a warm solution of carbolic acid (1.5 per cent. to 2 per cent.), or a solution of bichloride of mercury (1:10,000), into the auditory canal of the acutely inflamed ear before rupture or paracentesis occurs. After spontaneous rupture or artificial paracentesis a short, narrow strip of iodoform-gauze (1 in. by $\frac{1}{8}$ in.) should be inserted into the canal nearly as far as the membrana, the concha then gently filled with iodoform-gauze or iodoform-cotton, and the ear let alone for at least twenty-four hours. Then the same kind of dressings should go on again. This favors the escape of pathogenic organisms, generally the streptococcus albus, and prevents the entrance of staphylococci and secondary infection. Any other treatment, especially one calling for syringing anything into the ear, will be very likely to provoke a secondary infection of the drum-cavity. It is cases treated in this septic manner which lead to instances of so-called acute mastoiditis, with other bad results. It is very much to be regretted that the treatment of the acutely inflamed ear in many cases has been far worse than no treatment. In many instances either the patient or his physician has ignorantly brought about secondary infection of the middle-ear and mastoid cavity by putting things in the ear instead of, in acute cases, favoring drainage, as just stated, by a filament of iodoform-gauze, or, in fact, letting the ear alone and permitting it to run. We cannot commend too highly the rational treatment marked out by Gradenigo and Pes in their article, from which we have condensed the above.

INFLAMMATION OF THE MIDDLE-EAR OF INFANTS.

HARTMANN and KOSSEL give the following results of their investigations on this subject, made in the Berlin Institute of Infectious Diseases (*Deutsche med. Wochenschrift*, No. 26, 1894):

1. Post-mortem examination and the examination of the ears of living children in this institution establish the fact that 75 per cent. suffer from inflammation of the middle-ear.
2. Inflammation of the middle-ear in infants can nearly always be detected by an otoscopic examination.
3. The general symptoms of otitis media are restlessness, elevated temperature, and loss of weight. Sometimes these symptoms are not present.
4. Very often the symptoms of otitis media are connected with bronchopneumonic processes. Probably both processes are due to the same cause—aspiration at birth.
5. Death can result in cases of otitis media, from slow atrophy or from an extension of the micro-organisms into the cranial cavity or into the blood.
6. The inflammations of the middle-ears of infants must receive treatment suitable for the varying conditions.

CARIES OF THE AUDITORY OSSICLES. CHRONIC PURULENT OTITIS MEDIA. RADICAL CURE OF CHRONIC OTORRHŒA.

Chronic purulent otitis media is caused by the entrance of staphylococci into the middle-ear through the perforation in the membrana caused by the acute process. These pathogenic organisms are usually inserted by the physician or patient by improper treatment rather than by neglect, as shown by LERMOYEZ and HELME (*Annales des Maladies de l'Oreille*, vol. xxi.). The chief result of the chronic inflammation is caries of the ossicles. The only cure for the malady when it reaches this stage is excision of the remnants of the diseased membrana and carious ossicula, as demonstrated by the reports of operations of Sexton, of New York, 1886, and other aural surgeons since then down to the recent good results of Mr. Hugh E. Jones, of Liverpool (*Liverpool Medico-Chirurgical Journal*, July, 1894); Beco, of Liége (*Annales des Mal. de l'Oreille*, vol. xx.); Dr. William Milligan (*British Med. Journal*, November 24, 1894); Grunert and Meier (*Archiv f. Ohrenh.*, vol. xxxviii.); Gleason, of Philadelphia (*Atlantic Medical Monthly*, March 25, 1895); and J. Orne Green, of Boston (*Boston City Hospital Medical and Surgical Reports*, 1895). The last named author operated in sixty cases, in which all other methods of treatment failed to check the discharge, which had lasted for from five to ten years. In many cases the discharge ceased absolutely; in others it was not entirely checked. Some cases were cured at first, but relapsed from poor hygiene. The hearing was much improved in many instances.

DERMATOLOGY.

UNDER THE CHARGE OF

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PECULIAR CUTANEOUS MANIFESTATIONS FROM QUININE.

C. W. ALLEN (*Medical Record*, January 26, 1895). The most frequent form of eruption resulting from quinine is probably the scarlatinoid, an erythematous rash, beginning usually on the face and subsequently extending over the whole surface. Other not uncommon forms are the urticarial and papular, while the vesicular, bullous, and purpuric are less frequently met with. Allen's case differed from the majority of those heretofore reported, in that the eruption occurred in a subject who had previously always been able to take quinine in moderately large doses, and had never before suffered in any way from its use; the smallness of the dose causing the eruption—one-quarter of a grain; the localization of the lesions, with no tendency to spread or to become generalized; in that the location of individual spots was always the same, no matter how large or small the dose; in that the eruption was produced four times accidentally and fourteen times experimentally; and, finally, in the fact that, varying the dose, the lesion, which was always primarily erythematous, became urticarial, œdematous, bullous, covered over with small vesicles, or converted into an excoriated patch. A woodcut illustrates the form, size, and distribution of the lesions, and the general pathology of the manifestation is fully considered.

The Protozoa-like Bodies of Herpes Zoster.

In a short paper read before the American Dermatological Association (*Journal of Cutaneous and Genito-Urinary Diseases*, September, 1894) **Hartzell** calls attention to and describes certain peculiar bodies found in the vesicles of herpes zoster, which Pfeiffer regards as protozoa and the cause of the disease. The author found these bodies not only in the ordinary forms of zoster, but also in a case of traumatic zoster in which there had been many recurrences for a period of years. He does not regard them as protozoa, but forms of cell-degeneration.

The Etiology of Pemphigus.

Dumesnil reports (*Archiv für Dermatologie und Syphilis*, Band xxx., Heft 2) in detail the histories of five cases of pemphigus, and from his observation of these and other cases he is led to the conclusion that the affection is dependent upon an anomaly of function of the nervous system, which is partly acquired and partly congenital. The author calls attention to the fact that pemphigus often recurs after strong psychic disturbance; and that the hysterical and those whose nervous system has suffered in its powers of resistance through chronic alcoholism or other toxic influence furnish a large contingent of pemphigus cases.

Eleidin.

Dreysel and **Oppler**, in a study of this substance as found in normal and pathologically changed skin (*Archiv für Dermatologie und Syphilis*, Band xxx. Heft 1), formulate the following conclusions:

1. Eleidin is a viscid substance found everywhere in the stratum lucidum of the human skin, in the borders of the hair-follicles, and in those parts of the excretory ducts of the sweat-glands which pass through the horny layer, in the shape of fine drops and larger accumulations. In the mucous membranes eleidin is found only in those parts adjoining the skin, and there only in small quantities.

2. Brief hardening in alcohol has no essential influence upon the tingibility and consistence of the eleidin. Its demonstration in alcohol-hardened skin is very simple. Staining succeeds best in picro-carmine and sulpho-acid nigrosin. The eleidin is fixed in a certain measure through staining, and shows after this an increased resistance to certain chemical influences.

3. The amount of the eleidin in the epidermis is not always proportional to that of the kerato-hyalin; in normal skin it is, in general, dependent upon the thickness of the horny layer, and is, therefore, greatest in the soles of the feet and tips of the fingers.

4. From numerous examinations of pathologically changed skin it can be concluded that in pure hyperkeratoses an increase of the eleidin, as of kerato-hyalin, is present. In diseases which accompany anomalies of cornification-parakeratoses the eleidin more completely and earlier disappears than

the kerato-hyalin, and has never been found when the nuclei in the stratum corneum have retained their tingibility, although kerato-hyalin may be demonstrated in such places.

In molluscum contagiosum the eleidin, as well as the kerato-hyalin, is greatly increased.

A Case of Papillary and Pigmentary Dystrophy (Acanthosis Nigricans).

Darier reports (*Annales de Dermatologie et de Syphilographie*, 1895, No. 2) a new case of this interesting and rare disease. The patient was an officer, thirty years of age, and while not exactly cachectic, he was perceptibly emaciated and pale. When examined nude one noticed a brownish discoloration of certain regions of the skin, particularly of the neck, the articular folds, and the epigastric region. Besides this abnormal pigmentation there was a verrucous or papillomatous condition of the skin in the same localities and in some non-pigmented places. There were also multiple papillomata and numerous nævi. The cutaneous affection had developed during the course of a grave chronic dyspepsia, which was probably connected with a gastric neoplasm. From this case and others previously observed the author concludes:

1. Papillary and pigmentary dystrophy (acanthosis nigricans) is a legitimate and well-defined morbid type, a regional and symmetric dermatosis, affecting from its beginning precise and constant localizations, and characterized by papillary hypertrophy and abnormal pigmentation.
2. This dystrophy seems to develop always secondarily to a gastric or abdominal carcinosis without one being able to say at the present time what is the physiological mechanism by which it is produced. It should be placed among the dermatoses which depend upon internal maladies.

A Puncture with a Bone of a Living Fish in the West Indies, followed by Leprosy, in a Caucasian Subject.

Ashmead reports (*Journal of the American Medical Association*, March 16, 1895) the case of a man, aged thirty-five years, who received a wound from the fin of a fish in Cuban waters, which was followed immediately by great swelling of the arm, lasting a week. Immediately afterward an eruption appeared on the front of the chest, the head, and the face, consisting of watery vesicles, which broke and formed large scabs. When the eruption had disappeared, after some months, red blotches remained on the nose and forehead, the latter situated symmetrically over the eyebrows. These blotches gradually thickened and became nodulated. This condition continued to increase, the ears becoming tuberculated. Soon after the first appearance of the blotches the patient discovered numbness on the ulnar side of the forearm; this was followed in time by numbness in the feet. At the present time the patient presents all the clinical features of leprosy; and sections made of an excised tubercle from the third finger of the left hand showed an abundance of the bacillus lepræ and leprosy cells. There is no history of leprosy in any preceding generation, and his children and grandchild are healthy.

Case Illustrating the Neurotic Origin of Hydrocystoma.

Mr. Jonathan Hutchinson reports (*British Journal of Dermatology*, May, 1895) a case of hydrocystoma in which the cysts were much more abundant on the right side than on the left. The patient, a woman, sixty-four years of age, was presented at his clinical demonstrations as an example of unilateral sweating, the sweating occurring upon the right side. In early life the patient had suffered much from severe headaches, which were much worse on the right side. Later she had neuralgia of the tongue, also more severe on the right side. Mr. Hutchinson believes that the life-long liability to hemicrania has had something to do with the disturbance in the skin.

OBSTETRICS.

UNDER THE CHARGE OF

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The Obstetrical Society of London and the Midwives Question

In his inaugural address as President, **Champneys** urged the duty of medical men to provide properly educated midwives for attendance upon the poor. He considered the first duty of the profession to be to the sick, and, inasmuch as poor women will employ midwives when they cannot obtain physicians, it is the duty of the profession to educate properly women capable of conducting normal cases.

This action of the President of the London Obstetrical Society is of interest, in view of the fact that the same problem presents itself to American medical men for solution. Among the foreign poor of American cities midwives practise extensively, and the American profession must sooner or later recognize this fact, and take action in the interest of the poor.

Myomectomy during Pregnancy.

Leopold contributes an article under this title in the *American Journal of Obstetrics*, May, 1895, in which he describes the case of a multigravida, pregnant, her condition being complicated by a hard, round tumor on the left side above the pubis. On making an abdominal incision a calcified myoma in the anterior uterine wall was found, freely movable, extending deeply into the muscular layers of the uterus. The capsule was incised transversely, the tumor removed, and its bed tamponed with iodoform-gauze. The bed of the tumor was obliterated by twenty-six deep and superficial catgut sutures. The peritoneal flaps were shortened and united by fine sutures. The patient made a perfect convalescence and went to term, being delivered spontaneously.

Respiration in the Newborn.

Dohrn, from a series of examinations made upon newborn children to determine the extent to which respiration is carried, has found that on the average, during the first ten days of life, a child respires fifty times to the minute. There seems to be no difference between prematurely born children and those at term, or between boys and girls, in the frequency of breathing. During crying an infant inspires less frequently than during regular breathing. Inspiration and expiration during crying vary from forty-seven to sixty-two to the minute. The average movement in expiratory respiration during the first ten days of life is forty-five cubic centimetres. The amount of air changed in respiration is the same in children of both sexes, but is less in prematurely born children. The depth of respiratory movements increases from the first to the tenth day of life, so that the expiratory movements during the last few days of the ten are increased twelve cubic centimetres. The reason for this increase is found in the enlarged play of the ribs, the dilatation of the bronchial tubes, and the increased respiratory necessity of the child. The depth of respiratory movements is less in the newborn than one would expect. It is evident that the first respiratory movements do not unfold the lungs, but that this process is a very gradual one.—*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxxii. Heft 1.

Endometritis during Pregnancy.

Emanuel and Wittkowsky (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxxii. Heft 1) have made examination of the lining membrane of the uterus in cases of pregnancy complicated by endometritis, and conclude that this condition results from a previous chronic endometritis which becomes acute upon the supervention of pregnancy.

Veit agrees with this conclusion, and calls attention to cases of myxoma of the chorion in which the decidua contains micro-organisms. He does not believe, however, that the ovum is infected and infects the mother; but, on the contrary, that myxoma of the chorion is usually caused by endometritis which has existed prior to conception.

Extra-uterine Gestation.

A series of interesting cases is reported from the Odessa Hospital by Thomson (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxxii. Heft 1). In the first of these cases the ovum died at six months, and began to be discharged by ulceration into the vagina. Incision and extraction of the ovum with its appendages were followed by cure. In a second case, in the last month of pregnancy, the ovum opened the abdominal wall by ulceration, causing in the process a fistula into the large intestine, which was subsequently closed by operation. Case III. was tubal gestation upon the right side, which recovered after operation. Case IV. was an extra-uterine gestation upon the left side in the tube, in which the ovum perished, and was gradually absorbed, the patient recovering without interference. In the last case of the series a tubal pregnancy upon the right side had ulcerated into the vagina, causing a partial stricture. From his experience Thomson concludes that one is not justified in waiting when, after rupture, a hæmatocele increases, or when the sac of the ovum becomes smaller and harder without the formation of a hæmatocele. When the fœtal sac ruptures between the layers of the broad ligament the circumstances are favorable for spontaneous recovery.

THE EXPERIENCE OF THE CLINIC BAUDELOCQUE IN SYMPHYSIOTOMY DURING THE YEAR 1894.

Although many of these cases have been formerly reported in the *Annales de Gynécologie*, for January, 1895, **PINARD**, in an interesting reprint, summarizes his experience of the past year. In his clinical practice he has ceased to induce labor. He has abandoned forceps applications which require the forcible delivery of the head through the bony pelvis above the pelvic cavity, or inferior strait. He has entirely abandoned embryotomy upon the living child. In place of these operations he proposes enlarging the pelvis by severing the symphysis, or some other portion of the bony pelvis, in all cases where uterine contractions do not overcome the resistance of the bony pelvis, and where pelvimetry shows that there is reason to believe that after the pelvis is opened its diameters will be sufficiently large to permit the extraction of a child at term. Where, however, after section of the pelvis sufficient will not be gained to permit the birth of a living child, he believes in practising abdominal incision, the extraction of the child by incision into the uterus, followed by hysterectomy, with the removal of the tubes and ovaries. There were twenty-two symphysiotomies at the clinic: nine done by Pinard, five by Varnier, six by Wallich, and two by Saint-Blaise. Thirteen of these patients were primiparæ, nine multigravidæ. In seventeen the child presented by the vertex, twice by the breech, once by the shoulder, once a brow presentation, and once a face presentation. In twenty cases the pelvis was rhachitic. In one, rhachitic with a congenital luxation of the femur, and in one case there was spondylolisthesis. One patient had symphysiotomy performed for the second time. Among these mothers there were three deaths; one from intestinal obstruction, caused by a fibrous band. Two patients died of sepsis who had been in labor some time before admission, and had been infected with sepsis before going into the clinic. None of these cases was complicated by hemorrhage. Although on several occasions slight injury to the anterior vaginal wall occurred at the moment of delivery, these injuries were not serious, and are easily avoided by dilating the vagina thoroughly with the De Ribes's elastic bag before symphysiotomy is performed. Pinard also hastened dilatation of the cervix in several cases by performing symphysiotomy early in labor, and thus bringing the head against the cervix to complete its opening. No after-complications were observed in these cases, the patients regaining their health and power to work.

TONIC MUSCULAR CONTRACTION IN THE FŒTUS IN A CASE OF ECLAMPSIA.

DOHRN reports (*Centralblatt für Gynäkologie*, 1895, No. 19) a very interesting case of a patient in fatal eclampsia, in whom the os and cervix were so tightly closed that artificial dilatation was impossible. Accordingly, postmortem Cæsarean section was practised immediately after death. It was found that the fœtus had perished, and apparently in a convulsion, as the jaws were tightly closed, the arms and legs bent, and the fingers drawn strongly into the palms. The child had but recently perished. So rigid were the muscles that it was necessary to open the uterus widely in order to extract the child. This persisted for sixteen hours after the delivery of the fœtus. Post-mortem examination upon the child showed extravasation of blood beneath the dura and in the arachnoid spaces over the left cerebral hemisphere.

POST-PARTUM HEMORRHAGE.

In the *Medical Press and Circular*, 1895, No. 19, is published a clinical lecture by SCHAUTA, of Vienna, upon "Post-partum Hemorrhage." He has observed that when the uterus is found after birth in the normal position and well contracted, if hemorrhage is present, it is usually from some laceration about the urethra, vagina, or cervix. Such tears are especially dangerous at the posterior extremity of the vagina, as large vessels leading to the cervix are thus opened. Small tumors of the uterus may have become torn during labor, thus producing hemorrhage. Such cases should be treated by thorough manual examination, followed by suture, removal of a small growth, or thorough tamponing with iodoform-gauze.

In avoiding the most usual cause of post-partum hemorrhage, namely, relaxation of the uterus, Schauta waits for half an hour to three hours for the spontaneous separation of the placenta. He encourages this by gentle friction, and would finally employ firm pressure if necessary. Should postpartum hemorrhage supervene, he would rub the uterus vigorously, use a hot douche, and pack the uterus with iodoform-gauze, leaving it twenty-four hours. If the uterine vessels are atheromatous, hysterectomy may be indicated. He has found the injection of saliue fluid beneath the skin of great value in these cases.

THE TEMPERATURE AND MORTALITY-RATE IN NEWBORN CHILDREN DEPENDENT UPON UMBILICAL INFECTION.

In the *Centralblatt für Gnyäkologie*, No. 1895, 17, HERMES reviews recent papers upon the subject, and describes the method of care employed in the Dantzig clinic, which is as follows: The cord is tied with fine linen-tape, soaked in a 3 per cent. carbolic acid solution, four fingers' breadth from the umbilicus. Precautions are taken to disinfect the nurse's hands before tying the cord. The stump of the cord is dressed in cotton and smeared with 4 per cent. carbolized vaseline, retained in place by a linen bandage. The dressing of the cord is changed daily after the bath, and the same dressing is placed upon the umbilicus after the cord separates until it is completely healed. The cotton used is carefully sterilized and kept in glass jars. Hermes' observations upon 100 children show that, with strict cleanliness, the child's temperature did not rise to 38° C. In only two of his cases was this temperature observed, and in these immediately after the separation of the cord, when the umbilicus secreted more abundantly than usual. Among his cases were two in which infection of the umbilicus occurred. In most of his cases the cord separated on the fifth day after the birth.

THE DIAGNOSIS OF FŒTAL POSITION BY EXTERNAL EXAMINATION.

BENTTNER (*Correspondenz Blatt für Schweizer Aerzte,* 1895, No. 10), in practising diagnosis by external manipulation, has found of especial value a method which consists in palpating the head with the two hands of the examiner. In one manipulation both hands are turned with their backs toward the abdominal surface of the mother, and firm but gentle pressure is made to distinguish the child's neck, the hands being placed beneath the chin and occiput. By the other manipulation the hands are turned in the same way, but one hand is pressed deeply behind the pubic joint, the palmar surface turned toward the pubis, while the other hand, with its dorsum toward the abdominal wall of the mother, presses in the sulcus between the head and the trunk.

A RESEARCH UPON RESPIRATION IN THE NEWBORN, AND METHODS OF RESUSCITATION.

In the *Berliner klinische Wochenschrift,* 1895, No. 17, **ZUNTZ** and **STRASSMANN** describe a series of investigations made upon respiration in the newborn with the aid of the manometer. The results of their studies are in favor of those methods of resuscitation which mechanically force air into the chest. They speak with especial stress of inflation of the lungs performed by the introduction of a soft catheter into the trachea.

ECLAMPSIA AND ITS CAUSATION.

SCHREIBER contributes from the obstetrical clinic at Odessa an interesting paper upon eclampsia, with the report of four cases (*Monatsschrift für Geburtshülfe und Gynäkologie*, 1895, Band i. Heft v.). By a review of the literature of the subject, he draws attention to the fact that the causation of eclampsia must be sought in a process which attacks not only the kidneys, but other eliminative organs of the body. Of his four cases, three recovered under the use of the hot pack and inhalations of chloroform, with injections of morphine and rapid delivery. His fourth case died, and the postmortem examination showed enlarged liver with degenerated liver-substance and cerebral anæmia as the only pathological conditions present.

THE TOXIC ELEMENT IN ECLAMPTIC CASES.

A most interesting research in the pathogenesis of eclampsia has been made by **LUDWIG** and **SAVOR**, assistants in Chrobak's clinic in Vienna.

They report in the *Monatsschrift für Geburtshülfe und Gynäkologie*, 1895, Band i. Heft v., the results of their investigations concerning the toxicity of the urine and the blood serum of eclamptic patients. They observed by experiments upon animals that the toxicity of the urine in these patients varies greatly from time to time. Contrary to what might be expected, during convulsions the toxicity of the urine is much less than at other times, while, on the contrary, the poisonous properties of the blood-serum of these cases increases markedly during the time of convulsions. These results were obtained by injecting into animals the urine and blood-serum from eclamptic cases.

These interesting investigations point clearly to the fact that retained toxins are the cause of eclampsia. They certainly point most strongly to the great indication for treatment in these cases, namely, the prompt promotion of elimination in every possible way.

TWO CASES OF ECTOPIC TUBAL GESTATION TREATED BY VAGINAL CŒLIOTOMY.

In the *Centralblatt für Gynäkologie*, 1895, No. 15, DÜHRSSEN reports two very interesting operations for tubal gestation. His plan of operation consists in opening the anterior wall of the vagina, separating the tissue between the vagina and bladder, drawing down the uterus to the vulva, ligating the broad ligaments with silkworm-gut, ligating the vessels with catgut, and removing tube or ovary, or exsecting small fibroid growths in the wall of the uterus. The incision in the vaginal wall is then closed by continuous catgut suture, and union is expected by first intention.

His first case was that of a multipara who had a tubal pregnancy upon the right side. A hæmatoma was present about the tube, and adhesions had formed. Under the plan of operation described the body of the uterus was pulled down, the affected tube and ovary removed, the adhesions broken up, and the pedicle or stump cauterized with the Paquelin cautery. Douglas's cul-de-sac was emptied of blood-clots, and a small myoma was removed from the posterior wall of the uterus and its former site cauterized. The uterus and left tube and ovary, which were found to be normal, were replaced, the deeper tissues closed with catgut, and the T-shaped incision in the vaginal wall closed with two continuous catgut sutures. Examination of the tube removed confirmed the diagnosis. The patient made an uneventful recovery, and a month later the remaining ovary was found movable, the uterus in normal anteversion, the right parametrium free from exudate, while the scar in the anterior vaginal wall resembled that of a successful anterior colporrhaphy.

His second case was that of a primigravida who suffered from tubal disease and tubal pregnancy upon the left side. By the method of operation described the gravid tube and ovary were removed, adhesions of the right tube were broken up and the tube removed, and the uterus was stitched to the anterior vaginal wall. The incisions in the vaginal wall were closed as before. This patient made a good recovery, and three weeks later the uterus was in normal position, while upon the left side a slight and non-sensitive thickening was found. Dührssen commends this form of operation in cases where the pregnancy is not advanced more than three months, because the shock is less than from abdominal cœliotomy, while the result is equally and, possibly, more satisfactory. The operation is more difficult than abdominal cœliotomy.

PUERPERAL ALBUMINURIA AND CONVULSIONS.

Sir John Williams (*Practitioner*, January, 1895) contributes an interesting paper in which he draws attention to the fact that renal disease is not the sole cause of puerperal eclampsia. The points which sustain this opinion in his mind are that convulsions may occur in the absence of albumin in the urine; that in many fatal cases of eclamptic convulsions disease of the kidneys is absent or insignificant; and that puerperal convulsions are comparatively rare in persons the subjects of chronic Bright's disease prior to the occurrence of pregnancy. Williams describes two cases of convulsions, associated with albuminuria, in which the albuminuria was not the whole of the disease nor the whole of the condition giving rise to the convulsions. His first case was that of a primigravida who had jaundice, increased liver-dulness and tenderness, without œdema of the face, legs, hands, or feet. The urine contained albumin, bile, granular casts, urates, and leucin. Blindness and epileptiform convulsions occurred. The uterus was dilated, and a dead fœtus expelled. The patient speedily recovered. About a year later she became pregnant again, and suffered greatly from sternal pain, with a dusky, bloated face, and albuminuria. Labor was again induced, and a six-months fœtus delivered. The urine contained urates, phosphates, mucus, and hyaline casts. A third pregnancy subsequently occurred, and the patient was kept under close observation. Albumin appeared, accompanied with a dusky, bloated face; this was relieved by bleeding. She continued to have attacks of bloating with scanty secretion of urine, sternal pain, and hard, small pulse. Labor was again induced, followed by recovery. A subsequent pregnancy went on successfully until the sixth month, when the patient was kept in bed, and her urine examined twice daily. Early in the ninth month albumin developed, the amount increasing steadily until confinement. After confinement her symptoms speedily passed away. The case was seen in consultation by Jenner and Matthews Duncan, the latter considering it a case of acute yellow atrophy of the liver. An analysis of her symptoms confirmed the belief that the cause of her condition was an irritant poison giving rise to severe arterial tension and albuminuria.

This view is borne out by the second case reported by Williams, which proved fatal. The patient was a primipara at the end of gestation. She had blindness, vomiting, and eclamptic fits, with stertorous breathing. She was slightly jaundiced, with very slight œdema of the ankles and eyelids. The pulse was small and hard. The liver-dulness extended to two fingers' breadth below the margin of the chest. The urine was the color of porter. The pupils were small and equal. Under chloroform and chloral labor was induced, and bleeding was practised. The patient died undelivered. The amount of urea excreted varied from $1\frac{4}{10}$ per cent. to $\frac{85}{100}$ per cent. Tryosin and leucin were present; bile-pigment, bile-acids, and blood-casts were also present. On post-mortem examination, eight hours after death, the integument of the child was found to be peeling. On microscopic examination of the liver the cells were found to be greatly altered, in many places vacuolated. The spleen was enlarged, the kidneys slightly so, their cortical substance presenting numerous small spaces. The cells of the kidney were many of them degenerated. Granular casts were found in the tubules in the medullary portions.

The pathology of the condition is that of a severe contamination of the blood, resulting in damage to the organs of excretion. The disease is far more complicated than Bright's disease.

Schultze's Method of Resuscitation in Children with Broken Clavicles.

Keilmann (*Centralblatt für Gynäkologie*, 1895, No. 3) reports two cases of difficult extraction, in which a clavicle of the child was broken, and in which it was necessary to practise Schultze's method of resuscitation. In both cases the children recovered, and union occurred without deformity.

PÆDIATRICS.

UNDER THE CHARGE OF

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Assisted by

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Persistence of Bacilli in Children Cured of Diphtheria.

Sevestre and Méry, in a communication to the Société médicale des Hôpitaux (*Revue mensuelle des Maladies de l'Enfance*, March, 1895), detail their studies at the Hôpital Trousseau upon this most important point. After quoting the observations of Loeffler, Roux and Yersin, Tobiesen, Tezenas, and Boureau, which, while agreeing in the main fact, differ greatly in the proportion of negative and positive results and in the degree of virulence observed in the latter class of cases, the authors proceed to contrast their observations in two distinct series of cases. The first class included those cases treated from June to December, 1873, by the methods then in vogue (repeated lavage, applications of local antiseptics); while the second series embraced the cases from December, 1894, treated by injections of antitoxin serum.

The first series numbered fifteen children in which the cultures of throat or of tracheal mucus had been positive and virulent, and the treatment had consisted of topical applications (Gaucher's liquid, and oftener the stérésol ot Berlioz) and nasal and pharyngeal irrigations every two or three hours with solution of carbolic acid 1 to 100. After disappearance of the membrane these irrigations were continued twice daily till the patients were discharged. The later cultures, after disappearance of false membrane, had given variable results: four times bacilli were not present after repeated examinations; twice they had persisted, but had lost their virulence; while once there was a single positive result after several examinations. In four cases virulent germs were found for a period of six to fifteen days after disappearance of membrane; in two cases the cultures from the throat were negative, but those from the nose showed the presence of bacilli, which in one case persisted for forty-nine days after removal of the tracheotomy-tube and thirty-eight days after leaving the hospital. In other words, in about half the cases the bacillus had disappeared at the same time as the membranes, or had, at least, ceased to be virulent; but in the other cases had continued for some time after the subsidence of active symptoms of the disease.

The second series of cases, which were treated by antitoxin, had had no local treatment but irrigations of Labarraque's solution (50 to 1000), and included ten cases. In three the results were negative after repeated examinations for one, two, or three weeks. In four cases cultures showed non-virulent bacilli, generally the short variety, although the long or medium bacillus had been present at the onset of the disease. Finally, in three cases a virulent bacillus was found in several successive cultures. In one of these cases, after viruleucy was demonstrated for twelve days after cure, the short, non-virulent variety was found in the several examinations after this period, and persisted nearly a month after the patient's leaving the hospital. The instances in which the virulent bacillus continued present were especially the grave cases in which the convalescence had been retarded by diphtheritic paralysis or by accidents imputable to the injections (eruptions, arthropathies).

From the above it may be seen that in the two series of cases the results, as far as persistence of bacilli is concerned, are very nearly the same. In comparison with the observations of others, the following conclusions are drawn:

1. In a certain number of cases the bacillus of Loeffler disappears about the same time as the false membranes, or persists for a shorter or longer time, but ceases then to be virulent, taking usually the form of the short variety. This favorable result is realized in one-half to two-thirds of the cases, more especially in those of milder type.

2. In another series of cases, less numerous, but forming an imposing minority, the bacillus persists in a virulent state for some time after the apparent cure of the disease. It may continue in the throat, but more often and for a longer time it is found in the nasal fossæ. Irrigation of the throat and nose appears to limit the persistence of the bacillus, and is therefore indicated not only during the acute stage of the disease, but also after the disappearance of false membrane and during the convalescence.

OBSERVATIONS UPON TEMPERATURE AND PULSE AFTER INJECTIONS OF DIPHTHERIA ANTITOXIN.

VARIOT (*Société médicale des Hôpitaux*, March 1, 1895) states that in most children, following an injection of the serum, there is a rise of temperature more or less marked: four hours after injection the thermometer shows $\frac{9}{10}$° to $1\frac{4}{5}$° F. higher than before; five to eight hours after, this has reached $1\frac{4}{5}$° to $2\frac{7}{10}$°.

In some cases the temperature may rise from normal to 104°. At the end of two to three days the temperature returns to normal. As the temperature rises after injection the pulse becomes accelerated, reaching 140, 150, or 160, and may remain high after the rectal temperature has fallen to 99½°; but after three or four days it returns to the normal, though remaining feeble and small. There is sometimes arhythmia. The author has observed these modifications of pulse in more than one-half of the children treated by the serum. That these effects are due to the serum, not to the disease, is shown by the fact that they have been observed in cases where the antitoxin was used in healthy children as a prophylactic.

THYROID-FEEDING IN CRETINISM.

OSLER (*Archives of Pediatrics*, February, 1895) records the further history and progress of one of the cases reported by him in 1893. (See AMERICAN JOURNAL OF THE MEDICAL SCIENCES, November, 1893.) When first seen by Osler, January 10, 1892, the child, a female, was two years and three months old. Well-marked symptoms of cretinism were present. As it was evident that the blood-condition was below par, she was ordered syrup of the iodide of iron. She was not seen again till March, 1893, when marked improvement was noted. She was then three and a half years old, her height being seventy-five cm. She looked more intelligent, took more notice, and the facial expression was decidedly brighter. She tried to say a few words, and had begun to walk with a little assistance. The most striking changes were in the disappearance, in great part, of the anæmia and lessening of the firm subcutaneous œdema which was previously so marked a feature.

Treatment with the thyroid extract was then begun, at first in the form of the glycerin extract in an amount corresponding to about a quarter of the gland in twenty-four hours. This she took during the summer and autumn, but later the desiccated gland was given in its place.

At the end of fourteen months, in April, 1894, the change was extraordinary, manifested, first, in entire loss of the cretinoid aspect, the color being good, and nutrition evidently much improved; second, she had begun to develop rapidly, and since the last measurements, fourteen months before, she had grown four inches in height; third, she walked and ran about everywhere; and, fourth, the mental development had been proportionately striking.

Another remarkable case showing the beneficial effects of thyroid-feeding has been recently reported by DR. J. P. WEST, of Bellaire, Ohio (*Archives of Pediatrics*, May, 1895). The child was first seen at the age of seventeen months, when she weighed but fourteen and a half pounds and was twenty-three inches in height, presenting a characteristic picture of cretinism, as evidenced by the photograph taken at that time. After six months of thyroid treatment the changes were remarkable. According to the report, which is fully borne out by the photograph accompanying it, there was no evidence that would indicate that the child was a cretin except her height (twenty-seven and a half inches). The skin was soft and clear, the hair plentiful, soft, and silky, and the expression of the face bright and intelligent. The tongue was perfectly normal, and her mouth anything but repulsive. Eight teeth had been cut.

A comparison of the two photographs shows more significantly than any description the wonderful change that had taken place during six months of treatment. During this time she took about 300 doses of desiccated thyroid extract and two drachms of the glycerin extract, the former in doses of one grain twice a day, the latter in doses of one and one-half drop thrice daily. During the administration of the latter preparation the dose had to be occasionally diminished on account of feverishness and fretfulness.

LEBRETON (*Gazette médicale de Paris*, January 19, 1895) reports a case in a boy, aged three years, in which some interesting points concerning the blood-condition were observed. Before the treatment was begun examination of the blood showed 1,750,000 red corpuscles and 4500 white, while the hæmoglobin measured 65 per cent. Six weeks later, during the period of active treatment, the red cells numbered 2,450,000, the white 9,600, and the hæmoglobin had increased to 68 per cent. Dried specimens, at the first examination, showed that the red cells were larger than normal and that some nucleated red cells were present, but this was not observed at the later examination. The relative proportion of mononuclear to polynuclear leucocytes was at first below normal, while the lymphocytes were increased in number. At the later examination there was marked improvement in this respect. The presence of nucleated red corpuscles is attributed to the fact that in these cases the fœtal process of blood-formation persists.

TREATMENT OF CHOLERA INFANTUM.

BLECH (*New York Medical Journal*, March 2, 1895) strongly advocates intestinal irrigation and stomach-washing. For the latter he uses hydrozone in the proportion of a tablespoonful to the pint of water; for the former purpose he uses cold water, adding about two ounces of hydrozone to the quart. Vomiting usually ceases after the first washing, but this procedure may be repeated if necessary. Irrigation of the bowel can be repeated every two hours. Among the other drugs only two are to be employed—morphine and strychnine—to be given hypodermically. No antipyretics should be given; if the fever is very high, and is not reduced by the intestinal irrigation, the whole body should be washed with alcohol. His dietetic regulations are in accord with those generally accepted at the present day.

ANTISPASMIN, A NEW REMEDY FOR WHOOPING-COUGH.

FRÜHWALD (*Archiv f. Kinderheilkunde*, Bd. xviii. Hft. 1 u. 2, S. 38) publishes his experience with antispasmin, a new hypnotic and sedative, which he has used with very satisfactory results in whooping-cough. Antispasmin, first brought to notice by Demme, is a combination of one molecule of narceinnatrium with three of salicylate of sodium. It is a white, feebly hygroscopic powder, readily soluble in water. According to Demme, it is a decided hypnotic and sedative in painful affections, especially of a spasmodic character.

The author has employed it in over two hundred cases of whooping-cough, and has experienced no bad effects upon the stomach or intestinal canal, nor a cumulative narcotic action even in very young children. The general effect noted has been prompt reduction in the intensity and number of attacks, and some shortening in the duration of the disease. The drug was usually ordered in a 5 or 10 per cent. solution, with dilute water of bitter almond, three or four times daily in a tablespoonful of sugar-water, or in milk or cocoa, in soup, or for older children on a half-coffeespoonful of pounded sugar. Of the 5 per cent. solution the dose for an infant under six months was 3 to 5 drops (=0.01 pro dosi); for a child of one year, 8 to 10 drops; two years, 10 to 12 drops; three years, 15 to 20 drops. For children over three years of age the 10 per cent. solution was used, beginning with a dose of 10 drops, three times daily, increasing, if necessary, to 15-drop doses, three or four times daily. The solution should be protected from the light by using a blue-glass bottle. The price of the drug at present is said to be high.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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Leucocytosis in Diphtheria.

Gabritschewsky (*Annales de l'Institut Pasteur*, 1894, viii. No. 10) has investigated the occurrence of leucocytosis in diphtheria, and the effect upon it of injections of antitoxic serum.

Fourteen cases of diphtheria in children form the basis of his observations. In all there was decided increase in the number of leucocytes in the blood. In six of the cases which ended fatally this leucocytosis increased greatly as the disease progressed, reaching a maximum a few hours before death, from which it would appear that hyper-leucocytosis is a distinctly unfavorable sign in diphtheria, diphtheria in this regard differing decidedly from acute lobar pneumonia and several other of the infectious diseases, in which leucocytosis would appear to be a material aid to recovery.

In eight of the cases, which were treated with antitoxic serum and in which recovery took place, a decided diminution in the number of leucocytes immediately followed the antitoxin injections.

Experiments with rabbits yielded the same results. Inoculations of diphtheria bacilli were followed by pronounced leucocytosis, which diminished after injections of antitoxin. Rabbits immunized before inoculation showed only moderate increase in the number of leucocytes, and this disappeared after twenty-four hours or so, while the leucocytosis of animals which had not been previously immunized increased steadily. There was also less rapid necrosis of the tissues and of the exudate at the point of inoculation in animals which had been immunized, and a greater activity of the leucocytes as phagocytes was noted in such animals. Similar results followed the inoculation of the vaginal mucous membrane of guinea-pigs.

As the result of his experiments, Gabritschewsky arrives at the following conclusions:

1. The leucocytosis of diphtheria is materially different from that of the other infectious diseases which have been investigated in that particular.
2. Hyper-leucocytosis is in diphtheria a distinctly unfavorable sign, and, consequently, valuable indications as to the progress of a case and the efficiency of any particular plan of treatment may often be gained from examination of the blood.
3. The diphtheria bacilli which find their way into the body are destroyed by the phagocytic action of the leucocytes.
4. The majority of the diphtheria bacilli concerned in the production of the lesion of diphtheria are cast off in the false membrane; only a very small number are disposed of by phagocytosis.
5. The action of the poison of diphtheria in inducing necrosis of cells tends to lessen the power of the leucocytes to act as phagocytes.
6. The action of antitoxic serum is to make all the cells of the body more resistant to the destructive action of the diphtheritic poison.

On Mixed Infection in Diphtheria.

The frequent association of the *streptococcus pyogenes* with the specific germ of diphtheria in the false membrane of that disease has been quite generally recognized by those who have carefully investigated its etiology, but its exact significance when thus associated has been uncertain. The fact that it produces, not infrequently, a croupous inflammation of the pharyngeal mucous membrane closely resembling in its clinical aspects that of true diphtheria is certainly suggestive that, at times, its *rôle* in diphtheria may be an important one.

With a view to throwing light upon this question, Bernheim (*Zeitschr. f. Hygiene u. Infectionskrankhtn.*, 1894, xviii. 529) has made a careful clinical and experimental study of the part played by the associated bacteria, basing his observations upon eleven cases of diphtheria. The streptococcus longus, streptococcus brevis, and staphylococci were found associated with Loeffler's bacillus in ten, eight, and six cases respectively, several of these species being present in a number of the cases. Animal inoculations showed the virulence of these germs to be very different in different cases, and as the number of them present and their virulence bore no definite relation to the severity of the cases Bernheim concludes that, from a bacteriological examination alone of the false membrane, but little information is to be gained as to the severity of any particular case.

Of special interest, however, is that part of the paper which relates Bernheim's attempt to determine by experiment the part played by the associated bacteria.

Associated bacteria, he says, may act in one or both of two ways upon the specific bacteria of a disease. They may accelerate or inhibit their growth or they may increase or diminish their virulence. It is evident that their effect will be important when they both accelerate the growth and increase the virulence of the specific germ. In his experiments with mixed bouillon-cultures of the bacillus diphtheriæ and the streptococcus Bernheim found that, while after a time the streptococcus died out, the diphtheria bacillus seemed to be stimulated to a rather more rapid and abundant growth than that which occurred when that germ was cultivated alone in the same medium. The growth of the diphtheria bacillus was also abundant in bouillon in which the streptococcus had been grown, but from which it had been removed by filtration. No similar effect was found to be produced by the staphylococci.

The virulence of the diphtheria bacillus appeared to be also increased by the presence of the streptococcus, but not so much so in cultures as when both germs were inoculated simultaneously. Thus, guinea-pigs without exception suffered more pronounced lesions, and died more quickly when both germs were inoculated than when Loeffler's bacillus alone was introduced. In this particular, also, the action of the staphylococcus was found to be different, for in several of the experiments the effect of the diphtheria bacillus seemed to be distinctly lessened by simultaneous injection of the staphylococcus.

That this more intense action of the diphtheria bacillus and streptococcus when inoculated together was not simply due to the fact that two species of virulent germs simultaneously produced their noxious effects was shown by the fact that cultures of the bacilli grown in streptococcus bouillon (from which all streptococci had been removed by filtration) were also found to possess a higher degree of virulence than similar cultures in bouillon in which streptococci had not been grown. It would thus appear that the virulence of the diphtheria bacillus is distinctly increased by the presence of the products of streptococcus growth.

In one of his cases Bernheim found the pseudo-diphtheria bacillus in association with Loeffler's, and it occurred to him that this germ might acquire virulence in the presence of the streptococcus; but all efforts to accomplish such a change by cultivation with the streptococcus and in bouillon containing streptococcus products were fruitless, a new point of difference between the true and the pseudo-diphtheria bacillus being thus developed.

With a view to determining the frequency of the occurrence of associated bacteria in the internal organs, REICHE (*Centralbl. f. innere Médicin*, 1895, xvi. No. 3) has examined the bodies of forty-two patients who died of diphtheria. In 64.3 per cent. of the cases either streptococcus or staphylococcus, or both, were present, and in 45.2 per cent. the streptococcus was present alone. In one case, that of a child who died on the second day of the disease, streptococci were obtained from the internal organs, demonstrating the rapidity of their penetration into the tissues.

THE PRESERVATION OF URINARY SEDIMENTS.

The following method of preserving urinary sediments is described by FISCHEL (*Prager medicin. Woch.*, 1895, No. 12) as superior to those which have heretofore been in use.

After collection of the sediment by settling, or by means of the centrifugal machine, it is twice washed with distilled water to remove the urine as completely as possible. It is then covered by a mixture of equal parts of glycerin and distilled water to which about 2 per cent. of a saturated alcoholic solution of thymol has been added.

As tested by Fischel, all manner of formed urinary sediments were preserved in this way for ten weeks in their original size and shape. They may, furthermore, be stained before preservation by the aniline dyes or hæmatoxylin.

Aside from its value to the teacher as a means of preservation of urinary and other formed pathological products, Fischel believes that such a method is of value to the clinician in that it enables him to make a comparison of the urinary exudate from time to time during the course of a nephritis, and thus to form a better opinion as to the progress of the disease.

Comparison of the Berkefeld and Chamberland-Pasteur Filters.

Dachnjewski (*Wratsch*, 1893, No. 19) has made a careful comparison of the Berkefeld and Chamberland-Pasteur filters as regards their efficiency as bacterial filters. In all particulars, except that it was somewhat more rapidly penetrated by the bacteria, the Berkefeld showed decided superiority. The Chamberland filter removed all bacteria from ordinary hydrant-water for from three to four weeks, while the Berkefeld was penetrated by them in from seven to ten days. The Berkefeld, however, filtered more than twice as rapidly, and is much cheaper. It is, therefore, strongly recommended as a filter for use in private houses and in hospitals.

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

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The Etiology of Typhoid Fever.

In an address delivered before the Fourteenth Congress of the Sanitary Institute, held at Liverpool in September, Klein (*Brit. Med. Journal*, Oct. 13, 1894) concisely rehearses the argument in favor of the etiological relationship of the *bacillus typhosus* to typhoid fever, expressing himself unequivocally against the theory of Roux, Vallet, Arloing, Kellog, and others, that the typhoid bacillus is nothing more than the *bacillus coli communis* which has acquired specific and virulent qualities by the action of sewage. In overthrowing this theory Klein carefully reviews the morphology and cultural peculiarities of the two germs in question, showing them to possess distinct specific differences.

After pointing out differences in shape and size, in motility, and in manner of growth on the different culture-media, he continues: "The three principal cultural characters, however, by which the two organisms can be distinguished best and easiest are: shake cultures in gelatin, milk cultures, and broth cultures. While the bacillus coli rapidly forms gas bubbles in gelatin shake cultures, the typhoid bacillus does not do so; while the bacillus coli curdles milk, the typhoid bacillus does not do so; and while the bacillus coli produces indol in broth cultures, the typhoid bacillus does not do so."

These characters of both germs are preserved through any number of generations, they are not influenced by prolonged action of sewage, and every effort to produce artificially from bacillus coli a species giving the cultural peculiarities of the typhoid bacillus has been futile.

Marked differences in the pathogenic action of the two germs when inoculated in animals are also cited.

An interesting point brought out by Klein is that the addition of nitrates to water materially increases its power to support the typhoid bacillus in a virulent condition. This would appear to explain the long persistence of the typhoid germ at times in water contaminated by sewage, or which has percolated through nitrate-containing soil.

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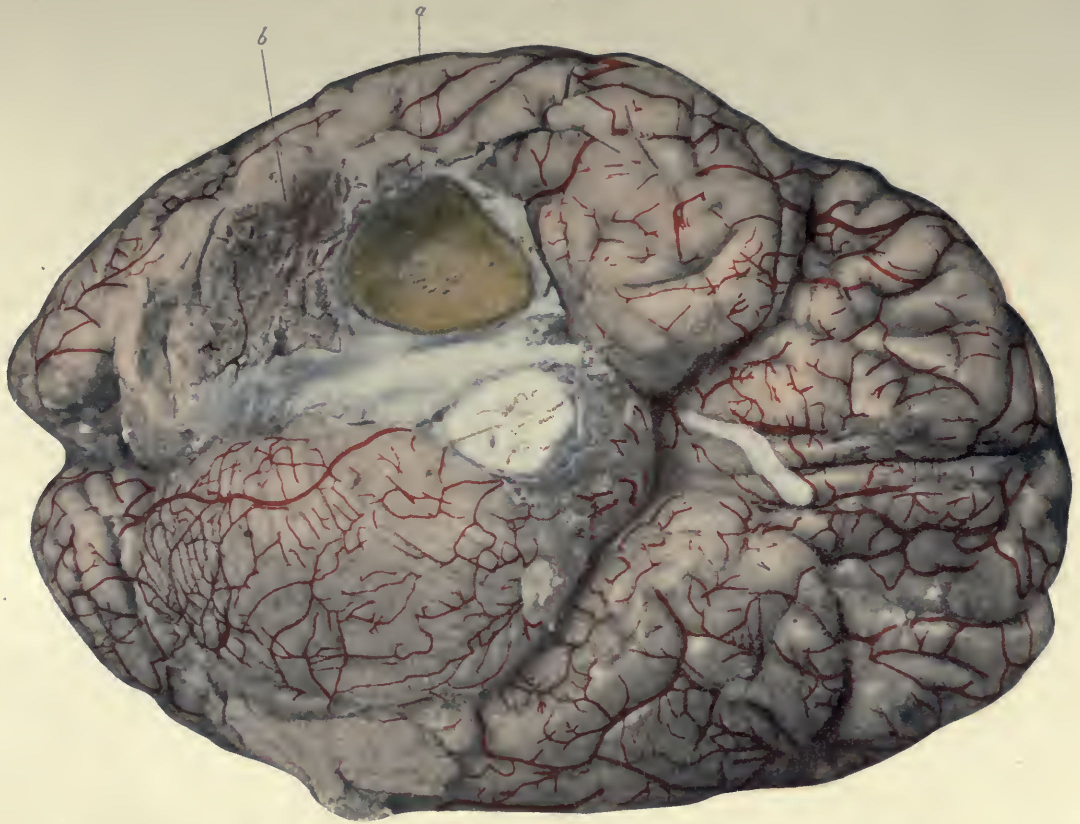

Abscess of cerebellum secondary to chronic suppurative otitis media. The right cerebellar hemisphere has been divided and the lower half removed, exposing the abscess cavity and its wall (*a*), and the area of hemorrhagic softening posterior to the abscess (*b*).

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AUGUST, 1895.

A CASE OF CEREBELLAR ABSCESS AS A RESULT OF CHRONIC SUPPURATIVE OTITIS MEDIA. OPERATION; DEATH; AUTOPSY.

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David S., Irish, single, aged thirty-one years, came to the Infirmary November 23, 1894, and stated that five years ago, without any apparent cause, the right ear suddenly felt "stopped up," and this was soon followed by a purulent discharge, which has continued ever since, except at irregular intervals of variable duration, when it would cease. There has never been much pain. The ear has now been discharging for one week. The membrana tympani is entirely destroyed, and numerous granulations obstruct the entrance to the attic. There is no pain or tenderness over the mastoid. The hearing-distance for the watch is 0/56 on the right side, with considerably diminished aërial and bone-conduction.

December 11*th*. The patient was admitted to the Infirmary to-day. The treatment up to date has consisted in the removal with curettes of the granulations in the ear, and the instillation of astringent drops. About six days ago he commenced to have nausea, vomiting, and vertigo, which have persisted up to the present time, the discharge from the ear being less in quantity. The vertigo is present when he lies down, but is much more marked when standing or moving about, with a tendency to fall laterally, but not forward or backward. Vomiting follows whenever he tries to take solid or liquid food. Loss of bone-conduction is very marked and almost absent.

14*th*. As it was impossible to establish proper drainage by removing the granulations around the attic from the auditory canal, I had the patient etherized, and after making the usual incision behind the auricle down to the bone with chisels and gouges I opened the mastoid cells. The bone covering the cells was very dense and like ivory. The antrum, reached at a depth of 32 mm., was found filled with granulations. These were removed, together with granulations in the attic, and the latter cavity enlarged, so that free drainage was established between the opening in the mastoid and the external auditory meatus, bichloride solution (1 : 5000) being syringed through. Iodoform-gauze was pushed well into the antrum, a few sutures were taken in the wound below, and a bandage applied.

17*th.* Since the operation the patient has rested well; there has been no vomiting, and the vertigo is much less marked. The ear was dressed for the first time since the operation. On removing the packing of iodoform-gauze there was an escape of a small quantity of foul-smelling pus. Bichloride solution was used, and iodoform-gauze reapplied as before. The patient's condition was so much improved to-day that he was anxious to be allowed to sit up.

22*d.* The patient had a severe attack of vomiting on the evening of December 17th, the first time since the operation. On the following morning there was some epistaxis. He has vomited all nourishment to-day until 6.30 P.M. He complains of severe pain on the top of the head, especially marked on the left side and extending to the occiput. Symptoms of facial paralysis on the right side were first noticed this morning. He has dizziness when sitting up in bed. The communication between the mastoid cells and external meatus is free. Balsam of Peru has been used daily in the wound, which is healing nicely.

24*th.* The patient was seen in consultation with Dr. M. Allen Starr, Dr. E. Gruening, and Dr. H. D. Noyes. Vision: right eye, 20/70; left eye, 20/30. Pupils equal and respond to light; undulatory; no paralysis; partial nystagmus on turning the eyes to either side. It was thought by Dr. Noyes that there was a slight œdema of the right optic nerve. The patient complains of severe headache, especially on the left side; vomiting; intense vertigo on motion; staggering gait, which has been present since the vertigo first troubled him; there appeared to be a tendency to stagger to the left; paralysis of the right side of the face, peripheral in character, as the eye was not closed; knee-jerks normal; no difficulty of swallowing nor of speech. The pulse 50 to 60 per minute. From the above symptoms an abscess in the cerebellum (right side) was suspected, especially as the temperature has not been above 99.6° F.

25*th.* All the symptoms were more marked to-day. Patient had slept none; more irritability, but quite clear in his mind; headache intense; vomiting constant; vertigo continued. Dr. Noyes thought the right disk markedly œdematous. Previous diagnosis of cerebellar abscess confirmed and immediate operation advised by Dr. Starr.

Operation. Present: Drs. Starr, Gruening, F. Whiting, and others. After the patient was etherized I enlarged the previous mastoid wound and exposed first the lateral sinus with chisels. The bone was very hard and dense, and the sinus was found normal. I then carried the incision directly backward four inches from the previous mastoid incision and removed a disk of bone 2 cm. in diameter at a point 5 cm. behind and 6 mm. below the centre of the external auditory meatus. There was slight pulsation of the dura, which seemed to be normal in appearance. Under direction of Dr. Starr I introduced a trocar and canula 2 mm. in diameter, withdrawing the trocar and connecting the canula and syringe. Different portions of the cerebellum were explored, but no pus was found. The mastoid incision previously made was then extended upward, and a disk of bone 2 cm. in diameter removed at a point 5 cm. directly above the centre of the external meatus. The trocar and canula were introduced in various directions, the syringe attached as before, with like negative results. I then chiselled away and removed sufficient bone with rongeurs about the antrum to allow me to explore the roof of the tympanum, but still pus was not found.

Iodoform gauze was then inserted in the antrum, and in the most dependent portions, while the rest of the wound was closed with sutures. Iodoform and bichloride gauze were then applied with a thick layer of cotton and the whole bandaged.

During the operation, which lasted about two and a half hours, it became necessary to administer hypodermic injections of strychnine, digitalis, and whiskey, as the patient's pulse was at times very rapid and weak. At 9.30 P.M. the pulse was 120, temperature 99°, respirations 20. The patient had fairly well recovered from the effects of the ether

December 26th. The patient has some pain in the head, but it is much less severe than before the operation; dizziness less marked; pulse 90; respirations normal; temperature 99° F. Iodide of potassium prescribed in ten-grain doses three times daily.

27*th.* Patient better able to close the right eye. There is less dizziness; no vomiting; he takes his nourishment well; pulse good; temperature normal; wound was dressed, it looks well; slight discharge and faint odor.

30*th.* Commenced to have severe pain in the head again yesterday. He vomits occasionally. He was very restless last night. He has occasional epistaxis. The iodide of potassium was discontinued and phenacetin ordered for the restlessness.

31*st.* Pain in the head very severe during the past night. He vomited profusely at 9.45 P.M., and the vomiting was projectile in character. In the early part of the night the patient tore off his bandage, saying that "he was crazy with pain." He rested well, however, during the latter part of the night. He had periods of delirium and deep somnolence, from which he could be fully aroused.

January 2, 1895. The patient was very irritable and noisy during the night, and complained of pain in the left side of the head and in the left eye; Cheyne-Stokes respiration was well marked from 2.30 to 6 A.M. There were noticed occasional "twitchings" on the left side of the face, left arm, and leg during the night. To-day the patient seems much brighter. There is no active delirium and the wound looks healthy.

4*th.* There has been some retraction of the head to-day. The patient has been given chloral and bromide of potassium for the restlessness. He has been delirious at times, but has taken nourishment and retained it all.

5*th.* Patient exceedingly irritable, answering questions in an angry voice. Pupils respond sluggishly to light, the right one being slightly larger than the left one.

8*th.* The patient's condition during the past three days has varied very much. At times he has seemed brighter and has complained of less pain, but the improvement has been only temporary. He was very restless last night, moaning and tearing at the bandage; facial paralysis decidedly better; retraction of the head has disappeared. The heart is weaker, the beats being more rapid. Tongue dry and coated.

9*th.* Patient growing weaker. Whiskey given at regular intervals as well as digitalis and strychnine sulphate hypodermically.

12*th.* The same irritability continues. Delirious at times; the patient constantly grinds his teeth; frequently he uses profane language. He has a wild and haggard appearance, and he is much emaciated. Urine examined: sp. gr. 1034; deep amber color and highly acid; no albumin or sugar; great excess of urea.

13*th.* There seems to be a loss of sensation or motion, or of both, in the left arm. Pupils equal in size, but contracted to size of pin's head.

14*th.* Extreme irritability; frequent delirious periods; haggard, wild-eyed appearance intensified and grinding of teeth frequent. Dr. Charles Stedman Bull examined the eyes to-day and found "pupils equal, react very slowly; neuro-retinitis with exudation rather than a simple papillitis, the exudation being more marked in the region of the disk, and between the disk and the macula, and more marked in the right eye."

15*th.* Patient deeply comatose and cannot be aroused at all; pulse 146 and weak. Respiration is distinctly of the Cheyne-Stokes variety, and has been since 5.30 A.M. He died at 2 P.M., the heart's action becoming gradually weaker and the beats more frequent, rather than any distinct change in respiration, which remained of the moderate Cheyne-Stokes type noted at 9.30 A.M.

From December 11th, the date of the patient's admission to the Infirmary, up to January 15th, the temperature ranged from 98° to 99.6° F., with the following exceptions: January 6th, 9 A.M. Temperature 97.8° F. 9th, 9 A.M. Temperature 97.6° F. 10th, 9 A.M. Temperature 97.8° F. 12th, 7 P.M. Temperature 100° F. 13th, 9 A.M. Temperature 101.4° F. 15th, 9 A.M. Temperature 101.6° F.

Autopsy. Convexity of the brain normal in appearance. There is a slight general distention of the bloodvessels on the anterior part of the under surface of the cerebral hemispheres, but no exudation. The vessels of the pons and of the medulla are markedly distended; no exudation; no thickening of membranes.

Cerebellum. There is evident enlargement of the right lateral lobe of the cerebellum, most marked in its anterior and external portion, where the inferior surface is markedly discolored; it is yellowish, and is soft to the touch. The softening is limited to the anterior external two-thirds of the right lobe, the posterior median portion adjacent to the medulla being of normal consistency. The vessels on the surface of the cerebellum are distinct; but there is no exudation on the surface and apparently no meningitis. On division of the right cerebellar hemisphere, in the horizontal plane, an abscess containing thick fetid pus is found within the hemisphere, in its anterior part, measuring 4.5 cm. antero-posteriorly and 3 cm. transversely. Considerable pus escaped from the abscess at the autopsy; what remained was removed with difficulty by means of running water and cotton. The cavity of the abscess is surrounded by a wall 3 mm. in thickness, which limits it distinctly from the cerebellar tissue. The abscess-wall measures 4.5 mm. in its thickest portion. Posteriorly and external to the abscess the cerebellar tissue in the white matter is softened and discolored, and shows numerous punctate hemorrhages. This softening is most marked upon the superior surface of the cerebellar hemisphere, where the discoloration is present. There is no hemorrhage on the surface and the point of puncture is not indicated by any meningitis. A small defect in the cerebellar tissue, measuring about 2 mm. in diameter, is manifest at a point 5 cm.

to the right of the medulla and 4 cm. from the median limit of the hemisphere. This is probably the point of entrance of the needle at the time of the operation. The abscess has entirely obliterated the corpus dentatum, and its interior limit has encroached upon the middle cerebellar peduncle. The third and eighth nerves had undoubtedly been compressed by its inner portion.

Superior peduncle and fourth nerve normal. No meningitis. Discoloration and a little softening of the middle peduncle. The abscess approached the inferior surface of the cerebellum, which was markedly discolored and softened opposite the exit of the seventh and eighth nerves; but there was no meningitis and there was normal cerebellar tissue lying between the nerves and the abscess.

The puncture into the right cerebral hemisphere was at the middle of the third temporal convolution.

There was no evidence of meningitis over the surface of the cerebellum or anywhere else, so that the operation had been practically without harm to the patient.

According to Körner, abscesses of the brain, as a result of otitis media suppurativa, are found more frequently on the right side of the brain than on the left. In the above case the abscess was situated on the right side. In a case of abscess of the brain which I reported in the *Transactions of the American Otological Society for 1888* the abscess was found, however, in the left temporo sphenoidal lobe. I have reported also another case of an extra-dural abscess in the *New York Eye and Ear Infirmary Reports for 1895*, and in this case the abscess was also on the left side.

Barr, in the *British Medical Journal*, 1887, collected together the histories of seventy-six abscesses of the brain; of which number fifty-five were located in the temporo-sphenoidal lobe, thirteen in the cerebellum, two in the pons, and one in the crus.

In his *Treatise on Brain Surgery*, Starr says: "There are no local symptoms produced by abscesses in the temporo-sphenoidal lobe that we can recognize unless the abscess grows to such a point as to invade the second or first temporal convolution on the left side, when sensory aphasia develops. There are no local symptoms produced by abscess in one hemisphere of the cerebellum unless the abscess grows to the point of invading the middle lobe or the peduncle upon the base, when staggering begins. Thus, it is evident that in a very large majority of the cases of brain-abscess developing after ear-disease, the diagnosis must be based entirely upon general cerebral symptoms and not upon any local signs." The general symptoms as given by Starr are: "(1) Headache, usually general, occasionally worse on the side of the abscess; (2) mental irritability and mental dulness, with slowness of thought, imperfect attention and memory, and occasionally delirium; (3) prostration, stupor, and appearance of illness wholly out of proportion to the other symptoms; (4) temperature occasionally subnormal, showing little variation, rarely high and usually about 99°, and a pulse which is slow and sometimes intermittent; (5) tenderness of the head to percussion and an elevation of temperature over the side of the head on which the abscess lies; (6) chilly sensations and even an occasional chill; (7) disorder of the entire digestive system, nausea, vomiting, and constipation; (8) facial paralysis of the peripheral type on the side affected; (9) optic neuritis may appear, but is not a constant or even a frequent symptom. Consciousness is usually preserved, but the patient appears stupid, and as the abscess increases the stupor may deepen into coma; and general convulsions not infrequently occur."

Macewen, in *Diseases of the Brain and Spinal Cord*, says that "in two advanced cases of cerebellar abscess, accompanied by meningeal inflammation, the prominent features were those of extreme depression and prostration." Retraction of the head and neck, extremely slow pulse and respiration, with low temperature, and yawning were other prominent symptoms, besides clenching of the teeth from rigidity of the masseters, optic neuritis, and blindness. Macewen says "that the paralysis in such cases may be unilateral and on the same side as the abscess, provided the medulla be affected at a sufficiently low level. If the pons be most affected on the same side as the lesion, then the paralysis will be manifested on the opposite side. If the pressure is general on both sides of the medulla and pons, bilateral paralysis will result." Vertigo and vomiting were well marked in both of these cases reported by Macewen.

When a cerebellar abscess exists together with lateral sinus thrombosis there may be rigors or chills, with elevation of temperature and tenderness along the course of the jugular vein, if that vessel be affected.

Suppurative leptomeningitis is another complication liable to arise to make the diagnosis more difficult. There is apt to be more or less leptomeningitis in cases of cerebral abscess. Diffuse leptomeningitis gives rise to high temperature (without the remissions which are characteristic of infective sinus thrombosis), a rapid pulse, general irritability, and with the special senses very acute.

A case of cerebellar abscess successfully treated by operation has been reported by Mr. H. T. Winter and Dr. Edward Deanesly in the London *Lancet*, December 8, 1894. The patient, a lad, aged sixteen years, was admitted to the hospital February 6, 1894. He had been occasionally deaf for the past six months, but before the present illness was not known to have any discharge from the ear. Before admission he suffered from severe headache, earache in the left ear, pain in the back of the neck, vomiting, and discharge from the ear. After February 1st he was unable to sit up, and rested curled up on the right side. February 3d he shunned the light and the eyes were turned upward and inward. The respirations were not noticeably slow; temperature 97° F.; pulse 60. The lateral sinus was exposed by trephining one inch behind and one-half inch above the centre of the external meatus. Neither bone nor dura showed any sign of inflammation. The opening was then enlarged so as to explore the temporo-sphenoidal lobe with a fine hydrocele trocar, but nothing was found. The cerebellum was then investigated, a larger trocar being used, and thrust inward and forward for an inch and a quarter and the fluid evacuated. Deanesly in the same paper gives a condensed report of 21 cases, together with 2 which came under his own observation. These cases were reported during the past ten years. Of these 23 cases, 15 were males, 5 females, 3 sex not stated. The ages varied from three to fifty-two years. Purulent otitis media was present in all cases. The abscess lay in the anterior part of the lateral lobe of the cerebellum, on the same side as the disease of the ear (when this was unilateral), in all but 2 cases. In every case the abscess in the cerebellum was a simple one. In a great majority of the cases the abscess had arisen by direct local extension of infective inflammation from the posterior surface of the petrous bone to the contiguous part of the cerebellar hemisphere. Sinus phlebitis occurred with or without thrombosis in 7 cases. The previous duration of the otorrhœa varied from two months to fourteen years. Optic neuritis was definitely stated to have been absent in 3 out of 23 cases. In 8 the point was not recorded. Headache was present in all; vomiting present in 14 cases, absent in 3, not mentioned in the remaining cases. In nearly all the cases the temperature was raised above normal in the early stages, but in all, with one exception, it sank to normal or subnormal before operation or death. Other symptoms present in some and absent in others were: slowing of the respiration, Cheyne-Stokes respiration; repeated yawnings; slowness of cerebration and general apathy; irritability and intolerance of light; delirium; rigidity of the neck and retraction of the head; nystagmus; giddiness; unsteadiness in standing and a staggering gait; a tendency to fall laterally or forward; excluding paralysis or irritation of the facial muscles on the same side as the ear-disease, motor or sensory paralyses were observed in only 7 cases. The cerebellum was explored for pus in 12 out of 23 cases. Of the 12 cases 6 were successful, 4 of which were done by Macewen, and they were all difficult and complicated cases. The remaining 2 were comparatively simple cases.

In the case under consideration the pain was more marked on the left side and was of a shooting character, extending from the occiput to the frontal area. The discharge, which had been present for about five years, suddenly ceased and immediately the patient complained of vertigo, nausea, and had a well-marked staggering gait. Whenever the patient sat up in bed and looked to one side there was always a tendency to fall to the opposite side. The staggering gait was considered a symptom of great importance, together with the slow pulse, facial paralysis (peripheral), and commencing optic neuritis. It must not be forgotten, however, that vertigo, vomiting, and a staggering gait are symptoms observed in labyrinthine disease. Tests made with Politzer's tuning-forks showed that bone-conduction was almost lost, and the question had to be decided as to whether there was a secondary implication of the labyrinth which extended from the middle ear and caused a basilar meningitis. Pressure in such a case might have been made on both the auditory and facial nerves at the internal auditory meatus, giving rise to facial paralysis and loss of bone-conduction. The cochlea was probably not involved, as there was not any tinnitus. In Ménière's disease, and in labyrinthine disease generally, tinnitus is apt to be a prominent symptom.

Macewen attaches considerable importance to percussion of the skull in certain cases, and says that "when the lateral ventricles are distended with serous fluid, as may be occasioned by cerebellar tumors pressing on the fourth ventricle or by occlusion of the veins of Galen, or otherwise, the percussion-note is markedly altered, the resonance being greatly increased," conveying the idea of hollowness. Macewen has found this "clear percussion-note in over forty children and young adolescents, who have had distended ventricles arising from many different causes. In tumors of the cerebellum it is an aid to diagnosis. When present, along with abscess, it points to involvement of the cerebellar fossa."

In my case there seemed to be no difference in the percussion-note on the two sides.

At the autopsy there was not found any carious opening into the cranial fossa through any part of the petrous bone. The outer wall of the mastoid cells consisted of dense bone like ivory.

As thrombosis of the lateral sinus is frequently found to exist in cases of cerebellar abscess, it was deemed important to explore first the sinus before trephining for an abscess in the cerebellum. If the sinus had been affected, I should subsequently have enlarged the opening made to expose the sinus and have attempted to reach the abscess in that way. As I was unsuccessful in reaching the abscess in the cerebellum, I did not feel that, had I allowed the patient to come out of the ether then, I should have done my whole duty from the standpoint of an otologist without investigating the condition of the tympanic roof and exploring the temporo-sphenoidal lobe. I was supported in this view of the case by Dr. Gruening. An examination of these regions, however, gave a negative result.

The operation was performed throughout under strictly aseptic conditions. After an examination of the brain and abscess-cavity, it appears perfectly evident to Dr. Starr and the writer that it would have been impossible to evacuate the pus with a trocar of large calibre, on account of the thickness of the pus. Granting that the abscess was only half the present size at the time of the operation, it seems to us that the only relief that could have been afforded would have been by an enormous incision into the cerebellum and by dissecting out the wall of the abscess, which was located far forward in the cerebellum under the tentorium. This would have been almost absolutely impossible.

THE INFLUENCE OF HEREDITY UPON THE PROGRESS OF PHTHISIS.

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The subject of the influence of heredity upon pulmonary phthisis has often been discussed, and Reginald Thompson, Pollock, Williams, and others have by their careful analysis of a large number of cases demonstrated the main facts in the natural history of phthisis, in which family predisposition was exhibited. It would, therefore, appear unlikely that I could add anything material to the facts already ascertained, and certainly the number of my cases (250) is insufficient to prove anything new in this matter, and can only be taken as suggestive. The fact, however, that these cases were all treated in Colorado Springs at an altitude of 6000 feet gives them a somewhat different color and interest to the work already reported, which was mostly from hospital cases which were a comparatively short time under observation, and in climates unfavorable to prolonged life, or were private cases sent for the most part to various health-resorts, and their course and often termination were under the observation of physicians other than the reporter, so that the results are probably not so accurate as they might be; these cases, on the other hand, were all under the personal observation and care of the reporter during most of their illness, and many of them after their convalescence. They were not selected, except that only those were taken whose cases could be followed up and their progress and the results positively verified, and, in order to do so the better, no cases were taken which were seen for the first time less than two years ago. With these limitations 250 cases of phthisis are all to report on at the present time, for, though a much larger number of consumptives have been seen and treated during the same period, yet comparatively few of the cases can be traced so as to speak accurately and positively of results. Though it would undoubtedly have been better if the cases were continuous and covered all that were seen, yet as they are widely scattered over sixteen years of practice, they doubtless fairly represent the whole number, and that they are of average material is shown by the comparison of their general features with the statistics referred to, and as to the results, with the high altitude reports of others, which latter comparison exhibits a strong family resemblance in all the series of reports.

The title of this paper is the influence of heredity upon the progress of phthisis; whereas, perhaps the word heredity should be exchanged for one embracing more, viz., family phthisis.

Family phthisis may be mainly divided, first, into *parental*, where one or both parents had phthisis or tuberculosis;[1] second, *grandparental*, where atavism is shown by one or more of the grandparents being tainted and the intervening parents free; and third, *collateral*, where uncles and aunts, sisters and brothers, were affected.

There are apparently three ways in which the family may effect the development of phthisis, viz.: First, by direct transmission of the bacilli in procreation; second, by inheritance of a physique peculiarly susceptible to phthisis; third, by contagion from living with consumptive relatives or in their dwellings.

1. INHERITANCE OF BACILLI.—That the bacilli themselves can be transmitted has been abundantly proved by several observers. The recent work of Whittredge Williams, of the Johns Hopkins University,[2] shows this in the human being.

Whittredge Williams states that a series of systematic examinations have been made of all pathological specimens pertaining to the diseases of women which have come within their reach during the past few years, the material being derived from the operating- as well as the autopsy-table. He writes that "among other things it has served to demonstrate that tuberculosis of the female generative organs is of far more frequent occurrence than is generally supposed, and that instead of being merely a pathological curiosity it should be regarded as a disease of practical interest and importance." These reports indicate clearly the way in which tuberculosis is transmitted from the tuberculous mother to the fœtus, and how tuberculosis may be limited in the mother to the genital organs without disease elsewhere, and serves to explain how a tuberculous father may beget a tuberculous child without there being other than genital tuberculosis of the mother.

The evidence upon this subject is well set forth in a valuable article by the late Dr. John Keating,[3] entitled "The Plausibility of the Direct Transmission of Tuberculosis from Either Parent." My own clinical experience agrees with these opinions. I have known instances where the consumptive father died before or soon after the birth of his child, and where the element of contagion must be eliminated, knowing the habits of the family, the child subsequently developing tuberculosis and the mother remaining apparently quite healthy. The direct transmission of bacilli from the mother to the fœtus has been proved by Birch-Hirschfeld, and others, and several authentic cases were recited at the last Paris Congress of Tuberculosis.

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[1] These terms are used as equivalent; the cases of phthisis in which tuberculosis is not present are too rare to affect the questions here discussed.

[2] The Johns Hopkins Hospital Reports, vol. iii., Nos. 1, 2, and 3.

[3] Archives of Pediatrics, Sept. 1893.

The experiments of Hericourt and Richet upon dogs, and those of Gertner, have demonstrated the same facts with regard to animals.

Gertner gives the following summary of his article:[1] "The *résumé* of the whole series of experiments in a few words is as follows:

"Among the animals upon which experiments were made were mice, canary birds, and rabbits.

"As a result of the experiments which I have selected, I find that very often tubercle bacilli are transmitted from mother to offspring. To draw a conclusion from these experiments on animals and apply it to man is a matter which must be left to everyone's judgment.

"As these experiments have shown me a frequent transmission of tubercle bacilli from mother to offspring among the species I have chosen, and as statistics show that mortality from tuberculosis in man is greatest during the first year of his life, as also the disease is a chronic one, and the infection takes place at a relatively late fœtal period, and at birth tuberculosis cannot be expected to show itself, I assume, contrary to my former view, that with man, also, the tubercle bacillus is often transmitted from mother to child.

"The experiments with rabbits and guinea-pigs have shown nothing which would indicate the transference from father to offspring.

"Where tubercle bacilli were found in considerable number in the semen, infected offspring did not follow, but rather an infection of the mother occurred.

"If here I also draw a conclusion from the experiments on animals for man, it will be that in man also tuberculosis is not transferred by the copulative act from the father to the child. This is proven by the numerical ratio between spermatozoa and tubercle bacilli, even where the animal is especially susceptible to tuberculosis; there is only one bacillus to from 14 to 140 million, 1:14,000,000 or 1:140,000,000 spermatazoon in the semen. Also by the rarity of primary genital tuberculosis in the female and the mechanical impossibility of an inert, motionless tubercle bacillus attaching itself to a lively wriggling spermatozoon."

That the bacilli can be transmitted not only from the parents, but also occasionally from the grandparents is very probable. The revelations of autopsies which show tuberculosis of glands, etc., in persons who were believed to have had no evident tuberculosis, and who died from other causes, and the probability of many of the surgical tuberculoses of children being due to latent bacilli, which gave rise to no symptoms until a traumatism furnished the inflammatory products for the bacilli to feed upon, to retire again into innocuous desuetude with the rest given by splints, etc., to the inflamed parts, renders it almost, if not quite certain, that bacillary infection may be transmitted through a silent generation. Dr. Keating's article furnishes also good evidence for this belief.

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[1] Zeitschrift für Hygiene und infect. Koch & Fluege; No. 2, vol. B., p. 93.

2. Inheritance of Susceptibility.—In the collateral cases the question of the direct transmission of the disease of course does not enter. We have, therefore, for these cases to look for some other explanation of the undoubted connection and influence of collateral family predisposition upon the development of phthisis.

This relation is perhaps most often to be accounted for through the second channel through which the family may influence phthisis; that is, through the inheritance of a physique peculiarly susceptible to bacillary infection, or to the development of tuberculosis when once engrafted, or to both, and this inherited susceptibility may be that of a general deficiency or lack of power of resistance, or of a more special character, whereby the bacilli readily find entrance and are easily conveyed from one part to another, or the physique is perhaps more often one in which both of these conditions prevail; thus this tendency may be inherited through parents, who are silent, not having been exposed to sufficiently trying conditions to develop the disease, or because the influence of one parent was antagonistic; whereas, in the offspring circumstances favored the reception and growth of the disease, or the influence of the other parent was toward increasing the susceptibility. While it may be considered highly improbable that more than a very few of the cases with collateral taint inherited the bacilli from parents who showed no disease themselves, yet, on the other hand, it is very probable that among those with parental or grandparental predisposition there are many in whom there was no transmission of bacilli, but only of physique. This would seem most likely when the family predisposition was paternal.

3. Family Contagion.—We must now consider the question of contagion. This, as far as we know, means reception of the disease by inhalation. That children breathing the air of rooms in which their consumptive parents, brothers, sisters, uncles, or aunts were living or had lived, could inhale the dried sputum in the form of light dust, and so become inoculated with the bacilli, is unquestionably true, and no doubt a certain proportion of the cases of family phthisis can be accounted for in this way.

That a large number of so-called hereditary cases were not exposed to the dangers of family contagion is obvious, such as those whose consumptive relations with whom they lived, died too long before the onset of their own symptoms to make it probable that they could have communicated the disease personally or through the dwelling. Again, many were never in connection with the previous case, either personally or through other media. At a meeting of the New York Academy of Medicine held January 21, 1892, there was a discussion on the prevention of tuberculosis, which brought out some very interesting statements and facts. From among them I quote a portion of the remarks of Dr. D. C. G. Currier as pertinent to the question: "Although the temptation is ever present to use a 'royal road' for learning about the origin of the disease, and by assuming the inhalation theory as explaining all cases, and considering other explanations as unwarrantable, it must be insisted that the inhalation theory accounts for only a portion of the cases, and that, after all, heredity seems a very potent source, as evidenced by the common-sense experience of clinicians and statistical observers, as well as by bacteriologists of the highest standing, such as Prof. Baumgarten and others, who are thoroughly conversant with the exclusive literature of the subject and acquainted with all the progress and changes of the decade. An infant seems quite as liable to inhale the bacteria of desiccated sputum as an adult is, and then to develop tuberculosis of the lungs, if the inhalation theory is adequate to account for all cases; but we have the clinical fact presented us that the lungs do not develop tuberculosis in infants as often as in adult life, yet the glands, bones, and joints are relatively very often affected without any evidence that the infection arose primarily in the subject through inhalation of bacteria. These considerations, together with the occurrence of cases of fœtal tuberculosis, and the demonstrations by comparative biologists of the presence of bacteria in ova, as well as the established fact that 'structurally healthy testicles of tuberculous subjects can have bacilli detectable in their spermatozoa'—all of these considerations warrant the conclusion that tuberculosis may be inherited. That is, the most potent factor in the causation of tuberculosis can, in fœtal cases, be conveyed from a parent or parents immediately to the unborn child." To explain later developments, whether manifested in the lungs, or in the bones, joints, glands, or elsewhere, the assumption of heredity seems more adequate than the inhalation theory, particularly because in childhood the lung manifestations are decidedly in the minority, even if we do not include the considerable percentage (12) of latent tuberculosis reported by Bollinger and others who have made autopsies of children."

The questions of the probabilities, in each case, of the influence of the family phthisis being direct transmission, susceptibility, or contagion, have not been followed out so that statistics on this point can be given, but I am acquainted sufficiently definitely with the circumstances of enough of the cases to be satisfied that the theory of contagion leaves many unaccounted for.

Whatever the explanation of the development of phthisis among those with family phthisis, there are certain differences between acquired and so-called inherited phthisis which have been demonstrated by comparison of cases in large numbers, as has been done by Reginald Thompson, Williams, and others, which make the recording of further cases of value, not only in assisting the elucidation of the origin of the disease, but its prevention, prognosis, and treatment. I will, therefore, proceed to the analysis of my own cases and their comparison with others.

Analysis of Cases.—The number among the 250 cases of phthisis here reported in whom family phthisis was exhibited in parents, grandparents, uncles, aunts, sisters, or brothers was 139, parental 72, grandparental 19, collateral 48, while the acquired cases were 111. The accompanying table shows how the percentages compare with the statistics of others. It will be seen among five reports covering the same ground that there is a resemblance. On adding the percentages together and dividing by five the number of reports, the average percentage thus obtained is 53.1 per cent. of heredity, which is within 2 per cent. of that of my cases, showing that they are average ones on the whole in this respect at least. Again, it will be seen that taking parental cases alone, the figures are closely alike, about 25 per cent., except those of Dr. Williams,[1] which are 12 per cent., while the percentage of the five reports is 23.4 per cent., showing my cases to be 5 per cent. more than the average, while Dr. Williams' are nearly 12 per cent. less than it. Dr. Williams accounts for his small percentage of parental cases by the fact that his patients were of the richer class of persons and the others mostly hospital cases. My cases also, however, were mostly of well-to-do people and not hospital patients. Whether the different nationality of the patients, English and American, accounts for this contrast, I do not know.

Table I.

Reporter.	Total No. cases of phthisis.	Total per cent. with family predisposition.	Percentage of cases.		
			Parental.	Grandparental.	Collateral.
Solly	250	55.3	28.8	7 6	19.2
Williams	1000	48.4	12.0	1.0	34.4
Fuller	385	59.0	25.0	...	...
Denison	202	51.0	...	...	...
Fisk	100	52.0	...	...	...
Brompton Hospital	1010	....	24.4	...	...
Cotton	1000	....	25.0	...	...

" Brompton Hospital reports include only parents. Dr. Cotton's 1000 cases, including, however, only parents, brothers, and sisters, gives

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[1] Pulmonary Consumption, by C. T. B. Williams, M.D., and Charles Theodore Williams, M.D. Second edition, London.

36.7 per cent. family predisposition, and Dr. Pollock's, with the same relations, 30 per cent. Dr. Copland, without particulars, puts it at 47 per cent. Louis, Briquet, and Rutz give confirmatory estimates." (Williams.)

SEX.—Of the total number of cases 72.8 per cent. were males and 27.2 per cent. females; 52.7 per cent. of the males and 65 per cent. of the females exhibited family predisposition. This is in accord with the other statistics, which always show a higher per cent. of inheritance among females, though Dr. Reginald Thompson,[1] after an elaborate analysis and consideration of a large number of cases, comes to the opinion that this discrepancy is due to the larger proportion of deaths among female infants, and that many of these deaths are from phthisis, though not so reported, and if they were included it would be found that heredity was present in about an equal proportion in the two sexes.

In acquired phthisis Thompson's statistics show that females have less power of resistance, are earlier attacked, and are more often acute.

He further shows that in inherited phthisis males exhibit increased susceptibility in early life and lessened resistance and a larger proportion of acute cases, thus bearing a strong resemblance to acquired female phthisis, while inherited females have the same characteristics as acquired, only exaggerated.

TABLE II.—AGE.

	Solly, 250.	Williams, 1000.
	Percentages.	
Average age of attack of total number of cases	29.5	28.2
hereditary	29.2	24.9
acquired	30.2	29.1
hereditary, males	27.0	27.0
hereditary, females	27.6	21.5
acquired, males	29.1	30.3
acquired, females	27.0	23.0

The average age of attack in my cases, as is seen, was a year later than Williams's. The hereditary cases of both sexes combined average a year earlier in attack in my cases than the acquired, while in Williams's they are as much as four years earlier. Taking them by sexes we find that my hereditary males were attacked two years earlier than the acquired, while Williams's were three years earlier. My hereditary females were attacked six months later than the acquired, while Williams's hereditary females were attacked seven and one-half years earlier. Thompson's statistics demonstrate, as do Williams's and mine, that the hereditary cases are earlier attacked, and that the females both hereditary and acquired are earlier attacked than the males, and this is especially true of the hereditary female cases, which latter is not so, however, in my statistics. Whether this is from the operation of some special cause or because the number of cases is too limited, I do not know. The fact that in other respects our statistics are closely alike makes the latter improbable as the reason. Thompson shows that out of 4000 cases 2000 inherited and 2000 acquired, that up to twenty-five years of age the number of cases of inherited phthisis is more than double what it is after thirty years, being in proportion of 11 to 4.8, while in the acquired the proportion is only 3.7 to 7.4.

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[1] Family Phthisis, by Reginald Thompson, M.D. Published by Smith & Elder, London.

Stage of Disease.—With regard to the quality of the cases, of the total number 42.4 per cent. were in the first stage—that is, of tuberculization, 31.6 per cent. in the second stage, softening having commenced, while 24.8 were in the third stage, cavities being obviously present; of the hereditary cases 46.3 per cent. were in the first stage, 24.5 per cent. in the second stage, and 28.7 per cent. in the third; of the acquired cases only 27.8 per cent. were in the first stage, while there were 42.3 per cent. in the second and 19 per cent. in the third.

The larger proportion of first stage cases, among those with family predisposition, is in accord with other statistics, and I found the same to prevail in a continuous one hundred recently examined cases of my own, and also that the duration of the symptoms before treatment was begun was shorter among the hereditary than among the acquired cases. Among hereditary cases the explanation of these two facts lies probably in this, that the knowledge on the patient's part of the danger from inheritance causes him to seek advice earlier, whereas the case with no family predisposition lives mostly in the fool's paradise of the common error that there is no consumption except through inheritance.

Physique.—The limits of the paper do not allow of the showing of another fact, that of the comparative frequency with which persons of strong physique who are attacked with phthsis succumb, and as a strong physique is the greatest bulwark against the inroads of the disease, it is probably accounted for by the neglect of the warning on the part of the strong owing to the popular belief that subjects of consumption are only found among the feeble; whereas, we now know that the bacillus is no respecter of persons. Also, being unaccustomed to take care of themselves they are, when out of health, less prudent than the delicate.

There is possibly another reason why those of a strong physique are frequently attacked, and why the disease when started is so often rapid and fatal in its course; it is that being born, as they usually are, of a stock untainted with phthisis, they have no inheritance to grant them a partial or complete immunity or even tolerance, and the tuberculosis follows a like course to that of syphilis and certain other diseases when they attack a community previously free from such affections.

Results.—The results are grouped under four heads: cured, greatly improved, improved, and worse. The cured are those in whom all signs of disease have disappeared and whose general health is good. The greatly improved are those in whom the disease is apparently permanently arrested and the health good, and yet there remain some local signs or some disability. The improved are those whose fate is still uncertain, but whose tendency appears toward arrest and improvement, while the worse embrace all those who are deteriorating or have died, as the time of observation has been so prolonged most of these have died.

Totals. Of the hereditary cases 39.5 per cent. were cured and 69.1 per cent. benefited. Of the acquired cases 52.1 per cent. were cured and 72.2 per cent. benefited.

First-stage cases. Of these 65.7 per cent. were cured, that is, in so far as this disease may admit of the term; while taking the cured, the greatly improved, and the improved together, it may be said that 86.1 per cent. were benefited, while 13 per cent. deteriorated. In the first stage cases there were 62.5 per cent. cured and 89 per cent. benefited of the hereditary cases, while of the acquired there were 69 per cent. cured and 83.3 per cent. benefited. So that while of those with inheritance fewer are pronounced cured, yet the total number receiving benefit is greater.

The second and third stage cases taken together show among the hereditary, cured 16.5 per cent. and 49.3 benefited, and among the acquired, 35.2 per cent. cured and 61.2 benefited.

We thus see while the hereditary cases did almost as well as the acquired where they came under the influence of the climate during the first stage, they did infinitely worse in the later stages.

TABLE III.—STAGE.

	Percentages.		
	Cured.	Benefited.	Worse.
Total of all the hereditary cases	39.5	69.1	39.9
Total of all the acquired cases	52.1	72.2	27.8
First stage:			
Total hereditary	62.5	89.0	11 0
Total acquired	69.0	83.3	16.7
Parental	70.6	88.2	11.8
Grandparental	66.6	91 6	8.4
Collateral	44.4	100.0	0.0
Second stage:			
Total hereditary	26 4	64.7	35.3
Total acquired	34.7	54.3	45.7
Parental	33.3	66.6	33.4
Grandparental	0.0	66.6	33.6
Collateral	23.5	57.0	43.0
Third stage:			
Total hereditary	6.6	41.6	58.4
Total acquired	17.4	56.5	43.5
Parental	20.0	50.0	50.0
Grandparental	0.0	25.0	75.0
Collateral	0.0	50.0	50.0

The results among the three classes of heredity when compared with each other show that in all stages the percentage of cures is much higher among the parental than among the grandparental and collateral, and this superiority is more marked in the second-stage cases than in the first, and most marked in the second stage. The grandparental show more cures than the collateral in the first stage and less in the second and third stage. Comparing the parental with the acquired cases, we find a little higher percentage of cures among the parental in the first-stage cases, and a decidedly lower percentage among the parental cases in the second and third stages.

This is doubtless explained by the parental cases in the first stage being those who were especially impressed with their danger, and therefore changed their climate earlier and were more cautious in their conduct, while those parental cases which deferred changing climate till their disease had advanced to the second or third stage, did worse than the acquired, because many of them had inherited a worse physique, and their conduct was at least no wiser than the others.

The paternal and maternal cases show, on taking the total averages of all stages of each and comparing them, that while the percentage of cured is slightly better among the paternal, there were decidedly fewer benefited and more deteriorated, and comparing them both with the acquired the latter was in all respects much better.

In comparing the first-stage parental cases it is seen that the per cent. of cured is again higher among the paternal, as is that of the deteriorated, while the benefited are fewer, thus following the average of the totals.

In the second-stage cases the paternal continue to show a better per cent. of cured, while the average of the benefited is reversed, being higher than the maternal, and the deteriorated lower.

In the third-stage paternal cases none was cured, while 25 per cent. of the maternal are so reported, but more than twice the percentage of paternal cases were benefited.

It appears, therefore, that while on the whole the maternal received more benefit than the paternal, this was due to the larger percentage benefited in the first-stage cases, while in the second and third stage the percentage of benefited was higher among the paternal.

TABLE IV.—PARENTAL.

	Percentages.		
	Total.	Benefited.	Worse.
Total of all the acquired cases	52.1	72.2	27.8
Total of all the paternal cases	40.9	65.9	34.1
Total of all the maternal cases	42.3	59.5	40.5
First stage:			
Acquired	69.0	33.3	26.9
Paternal	73.3	75.0	25.0
Maternal	64.7	94.1	5.9
Second stage:			
Acquired	34.7	54.3	45.7
Paternal	50.0	75.0	25.0
Maternal	27.2	63.3	36.4
Third stage:			
Acquired	17.4	56.5	43.5
Paternal	0.0	80.0	20.0
Maternal	25.0	37.5	62.5

Deterioration. It is interesting to see how these results compare with those of Reginald Thompson, but the only point at which the comparison can be made is in the proportion of those who deteriorated, as Thompson does not give the results as to cured or benefited, but shows the order of severity, which is equivalent to my column of deterioration headed worse. In making this comparison we find that Thompson's results make the order as follows: Maternal worst, paternal next, and acquired best; while mine show the paternal to be the worst, the maternal next, and again the acquired best. Taking the benefited column in the same way, we get the same results; while looking at the cured column alone, we find the order the same as Thompson's, the paternal being a little better than the maternal. Again, comparing the worse column in each stage of my cases with Thompson's totals, we find that in the first stage the acquired are the worst, the paternal next, and the maternal best. In the second stage the acquired are again the worst, while the maternal have changed places with the paternal. In the third stage the maternal are the worst, the acquired next, and the paternal the best.

It is perhaps well to look for a reason for this. In my cases the total maternal show up better than the paternal, contrary to Thompson's, which are from a very much larger number of cases, and, it is fair to assume, exhibit what may be termed the natural history of phthisis, as his statistics are almost entirely drawn from hospital patients who were subjected for most of the time of their illness to the trying conditions of life among the London poor, and who were all the time under the depressing influence of the English climate, both of which would more than offset the benefits of hospital care and treatment, and therefore it is probable that they exhibit the natural tendency of the disease without material hindrance from other causes; whereas the few cases I report, while showing a strong resemblance to those of Thompson's and other observers, and therefore probably being of the same average material as his to start with, exhibit a difference in the results as regards maternal and paternal cases. Possibly for these reasons, in referring to Table IV., it will be seen that my maternal cases show better than the paternal in the total, because the first stage is better, and it is probable that my number of first-stage cases is greater in proportion than Thompson's, and therefore have more effect on the totals. As the poor, from whom Thompson's cases are drawn, are more apt to delay seeking advice than the well-to-do people, who comprise my cases, therefore my first-stage cases have proportionately more influence than his; but as his cases are not reported as to the stage they were in when first coming under observation, this cannot be proved.

Again, Thompson shows that the disease among the maternal cases is markedly more acute than among the paternal, and that the largest number of the maternal cases die within eighteen months. That is evidently the natural tendency; but my cases, coming early under the beneficial influence of altitude, many of those were cured or benefited who would in London probably have died within eighteen months, whereas the paternal cases, being naturally more chronic, would not be so quickly or markedly influenced in the first stage. While the arresting and curative influence of altitude is exhibited more or less, with some few exceptions, upon all forms and stages of pulmonary tuberculosis, it is especially manifested in its relatively brilliant results upon early acute tuberculosis, which is the form taken by most of the maternal cases, as shown by Thompson and confirmed by the observations of others, including myself.

The influence of sex upon my results is not apparent. While Thompson's extensive and voluminous statistics give some interesting points of difference, they do not apparently affect the general conclusions with which we have been dealing, and the number of my cases when divided up into sexes is too small at present to justify any conclusions or even inferences, and it suffices to say that I have looked into the matter sufficiently to be satisfied that my cases do not show any important sexual differences from those of Thompson.

Conclusions.—The conclusions arrived at from the foregoing study of family phthisis are, that the connection between phthisis in an individual and phthisis in the family of the same individual must be through one or more of three channels, viz., by inheritance of bacilli, by inheritance of susceptibility, or by contagion.

In the past the first channel, *i. e.*, direct inheritance of the tuberculosis, has been credited with being the most frequent and almost only route along which tuberculous phthisis travelled, and for this reason many cases without previous phthisis in the family have been unrecognized and untreated till in a hopeless condition, and many were ascribed to inheritance when the disease had in reality travelled along the third route, viz., that of contagion; and, further, undoubtedly many cases where the family phthisis had affected the individual only through the channel of an inherited susceptibility were attributed to true heredity. Admitting these points, and also that the cases of direct inheritance are very much fewer than was usually supposed, and the importance of realizing that what most have thought to be the necessary doom of heredity can be averted in many cases and modified in all, by care of the sputum, cleanliness, sunshine, and ventilation in the dwelling, and also by the continuous healthy life and personal hygiene of the threatened descendant, *yet the evidence is too strong to ignore heredity as an important cause of tuberculosis.*

The recognition of heredity is undoubtedly of considerable importance in diagnosis, prognosis, and treatment, especially in the ordering of the life of the patient with respect to climate and occupation. And this recognition should not be lost sight of in the present much-needed crusade against careless expectoration.

The analyses of cases with family phthisis here given confirm in a general way what has been demonstrated by other observers, viz., that whatever may be the explanation of the pathological connection between the consumptive and his phthisical relations, there are certain broad differences in the character and course of hereditary phthisis when compared with the acquired disease. These stated briefly are that the percentage of females is higher among the hereditary than the acquired cases, and the hereditary females exhibit the characteristics of their sex when phthisical much more strongly, being earlier attacked and more of them dying within eighteen months, and also in showing less resistance. The male hereditary cases exhibit relatively the same peculiarities as the male acquired. The hereditary cases as a whole are much earlier attacked than the acquired, and the proportion of cases in the first stage when coming under medical observation is much greater among the hereditary.

In considering the origin and natural history of family phthisis my statistics can be compared with a large number of other reports; but as to results the means of comparison are more meagre, especially in reports from cases treated in high climates. However, those that are available bear out in the main the same conclusions, viz., taking all the cases in all stages together, and comparing the hereditary with the acquired, the results are better among the acquired than among the hereditary, while in the first-stage cases alone there are more benefited of the hereditary than of the acquired.

The parental cases are shown to do better than the grandparental or collateral, and the acquired better than the parental, except in the first stage. In comparing the totals of the paternal, maternal, and acquired cases, mine stand in the following order of results most benefited: First, acquired; second, maternal; third, paternal. Thompson's order is: First, acquired; second, paternal; third, maternal. While there is a strong resemblance between my cases and those of others, there are, as has been shown, points of difference, some of which are probably due to the especial influence of altitude. The theory that under certain conditions family phthisis grants immunity, or modified immunity or tolerance, receives some support from these inquiries, and from my own clinical impressions, but especially in the view that heredity cases when they do not die, as so many do, in the onset of the disease, are generally more chronic in their course toward death or recovery than acquired cases. And it may be said that the knowledge of inheritance, though depressing to the descendant, is also salutary in inducing prudence of life and a ready resort to medical aid when attacked.

THE ANTI-BACTERIAL ACTION OF ACETANILID.

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and
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Acetanilid, also known chemically as phenyl-acetanamide, C_6H_5NH-C_2H_3O, is produced by the action of aniline upon acetic anhydride or acetyl chloride, and is an odorless, white, crystalline powder of low specific gravity, only very slightly soluble in cold water, but soluble to the extent of nearly 1 per cent. in boiling water.

Although well known as a therapeutic agent, acetanilid has only recently been advocated as a surgical dressing. Dr. Harrell,[1] surgeon of the Seattle Coal and Iron Company, found that the wounds of men injured in the mines were very difficult to heal, even when the best antiseptic agents known were employed; and in his endeavor to find some more efficient dressing, and being impressed by the strong anti-bacterial powers of some of the coal-tar derivatives, he tried acetanilid. His results were most encouraging, in every instance the wounds healing quickly, even where coal-dust and other foreign matter had gained entrance.

Since the publication of Dr. Harrell's article acetanilid has been substituted for iodoform in the surgical dispensary of the German Hospital of Philadelphia, and in only a few cases has suppuration occurred. In his report[2] Dr. Hand says that this powder is far superior to iodoform, the dryness of the wounds in all cases being remarkable. Another to follow Dr. Harrell's example was Dr. Knowles,[1] who, having used acetanilid in many severe surgical cases in veterinary practice during the past winter, is very enthusiastic in its praise.

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[1] Medical News, October, 1893.

[2] Medical News, vol. lxiv. p. 269.

From a clinical standpoint, then, it would appear that acetanilid is a germicide, or, at least, an antiseptic, and it is the object of this paper to ascertain whether laboratory experiments will support this clinical evidence. Is acetanilid a germicide, or is it simply an antiseptic?

The distinction between an antiseptic and a germicide should be well understood. Sternberg defines these terms as follows:

"Antiseptics restrain the growth of micro-organisms which produce septic decomposition without destroying their vitality. Disinfectants destroy the germs of infectious diseases. Germicides is an extended term of the latter—agents that kill non-pathogenic bacteria as well as disease germs."

But little has been published regarding the effect of acetanilid upon micro-organisms. Lépine, in an article on the "Physiological and Therapeutic Action of Acetanilid," in the *Revue de Médecine* for 1887, only incidentally touches this point. In the few experiments made only watery solutions of the powder were used, but in spite of this and in spite of the fact that he worked with very dilute solutions, the results would seem to indicate a slight antiseptic action.

Preliminary Experiments.—A number of preliminary experiments demonstrated that acetanilid had a decided inhibitory effect on the growth of the staphylococcus pyogenes aureus. In these experiments acetanilid crystals were added to nutrient gelatin in amounts roughly estimated to be about 10, 5, 1, ½, and ⅛ per cent.; the tubes were then placed in the steam sterilizer from fifteen minutes to one-half an hour. Upon removing them the acetanilid was in some instances found to be entirely dissolved; in others it was still visible as an oily mass, varying in size with the amount of acetanilid added. Again, of two tubes containing the same percentage of acetanilid one would show this oily appearance, while in the other at the bottom would be a hard amorphous cake of acetanilid.[2] As the tubes gradually cooled off crystals of acetanilid appeared in all tubes containing more than 1 per cent. of the powder. The gelatin was then hardened as quickly as possible in cold water, that the crystals might be held in suspension, and by constantly shaking the tubes an even distribution of the acetanilid through the gelatin was obtained. The tubes were then inoculated with staphylococcus pyogenes aureus, this being the organism most frequently occurring in pus.[3] The result was in every instance a marked inhibition of the growth of the organism. Even in the tubes containing only one-eighth of 1 per cent. of acetanilid the inhibitory action was noticeable, though slight, if compared with a control-tube.

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[1] Medical News, vol. lxiv. p. 419.

[2] It was afterward learned that this was probably due to the uneven distribution of heat in the steam chamber; for by boiling such acetanilid tubes over an open flame the amorphous cake quickly became an oily mass, and this an instant later went into solution.

[3] According to Fraenkel, it is present in 80 per cent. of all cases examined.

Profiting by our experience in these preliminary experiments we now practically repeated them, using, however, every care to get the percentages correct. In the following experiments the more common organisms of surgical diseases were used: The pus-producing micrococci-staphylococcus pyogenes aureus, staphylococcus pyogenes citreus, and an unidentified non-liquefying coccus, sent to us and accidentally labelled staphylococcus pyogenes albus; also bacillus pyocyaneus, commonly called the bacillus of green pus. In all experiments the organisms used were in a vigorous condition.

Experiment I.—To each of six tubes containing 5 c.cm. of melted nutrient gelatin was added 0.5 gramme, or 10 per cent., of acetanilid. These tubes were then boiled, thus dissolving the acetanilid. Upon cooling most of the acetanilid crystallized out, filling the medium with crystals. The gelatin was then solidified as rapidly as possible in cold water, as before mentioned. As a result the gelatin was rendered perfectly opaque. Two tubes were then inoculated with staphylococcus pyogenes aureus, two with staphylococcus pyogenes citreus, and two with bacillus pyocyaneus; three control-cultures were also made in nutrient gelatin, free from acetanilid, and all the tubes were left to grow at the room-temprerature under exactly similar conditions.

After *four days* the control-cultures were growing rapidly, but there were no signs of growth in any of the other tubes.

On the *eleventh day* there was very slight evidence of growth in the staphylococcus pyogenes aureus and the staphylococcus pyogenes citreus tubes, while the gelatin in their controls was practically completely liquefied. The tubes inoculated with bacillus pyocyaneus were still sterile with the exception of the control, which had grown extensively.

On the *twentieth day* the aureus and citreus tubes containing acetanilid presented the following appearance: On the surface and in the centre of the gelatin where the inoculating-needle entered there was, in every case, a little circular pit-like depression, perhaps two mm. in diameter and two mm. in depth. This pit was partially filled with a thick, cloudy fluid, which proved, upon microscopic examination, to be filled with cocci. This was the only evidence of growth in these tubes, the gelatin on the sides and below this depression being still perfectly firm.

The bacillus pyocyaneus tubes were still sterile on the twentieth day, excepting, of course, the control-tube in which the gelatin was almost completely liquefied by the growth of the organism.

On the *fortieth day* the pit above referred to had become much deeper in the citreus tubes, but its diameter was unaltered, and the hollow seemed to contain no fluid. One of the aureus tubes presented a similar appearance, while in the other the whole upper part of the gelatin was liquefied for nearly one-quarter of an inch. The bacillus pyocyaneus still showed no evidence of growth.

Experiment II.—This experiment is similar to Experiment I., except that in this case 0.25 gramme, or 5 per cent., of acetanilid was used. The tubes were prepared as before, but the amount of acetanilid crystallizing out was not so great as in the first instance, therefore the gelatin, although still well filled with crystals, and consequently opaque, was not so much so as in the first experiment, and the growth could be better observed.

Fifth day. The acetanilid-tubes show no growth, while the control-tubes have developed much and are rapidly liquefying the gelatin.

Eleventh day. Undoubted growth in the aureus and citreus tubes containing acetanilid, with very slight liquefaction of the gelatin at the surface. Their control-tubes are entirely liquefied.

Twenty seventh day. The gelatin in the acetanilid tubes inoculated with staphylococcus pyogenes aureus is about half liquefied by the growth of the organism; the gelatin in the similar citreus tubes is about one-quarter liquefied.

The tubes inoculated with bacillus pyocyaneus are still sterile, except the control, which is more than two thirds liquefied.

Fortieth day. The growth and liquefication have slightly increased in aureus and citreus tubes. Bacillus pyocyaneus tubes are still sterile.

It is interesting to compare this experiment with a similar one performed by Jeffries[1] in his work upon iodoform. The experiments are in every way similar, excepting that Jeffries used 5 per cent. of iodoform. On the second day all the tubes were growing, and on the fourteenth day they were completely liquefied.

Experiment III.—Identical with Experiment I., except that 0.05 gramme, or 1 per cent., of acetanilid was used. In this case all the acetanilid went into solution on boiling, leaving the gelatin perfectly clear, when it was again solidified. After some days, however, the room becoming somewhat cooler, a few crystals of acetanilid appeared in different parts of the gelatin, mostly upon or near the surface. But this in no way deterred one from easily watching the developing of the organisms along the needle-track.

Sixth day. No evidence of growth except in the control-tubes.

Ninth day. There is a slight growth along the track of the inoculating-needle in the acetanilid tubes, while the control-tubes show rapid growth and much liquefaction. (See photographs of aureus and citreus tubes taken to-day.)

Twenty-second day. There is no visible increase in the growth of the acetanilid-tubes since the ninth day.

Fortieth day. Hardly any visible increase in the growth. Bacillus pyocyaneus tubes containing acetanilid are still sterile, their control-tube, of course, is completely liquefied.

In this experiment the non-liquefying coccus was also used, and on the fortieth day there was a meagre growth in the acetanilid-tubes along the needle-track, but none on the surface, while the control-tube showed more growth along the track and the thick surface-growth extended almost to the glass.

A similar experiment to the above was made with 1 per cent. iodoform in gelatin. In this instance the iodoform did not dissolve upon boiling, therefore the tubes were quickly cooled in ice-water, that the crystals might be evenly distributed through the gelatin. The tubes were then inoculated with staphylococcus pyogenes aureus and staphyloccocus pyogenes citreus. On the third day there were an excellent growth and marked liquefaction of the gelatin.

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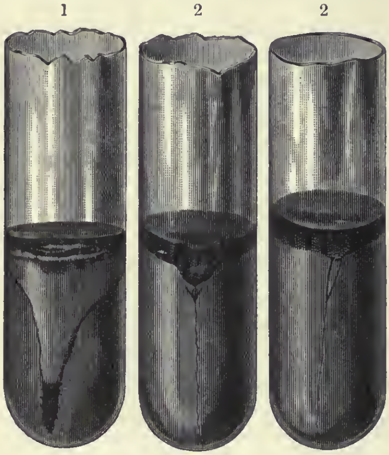
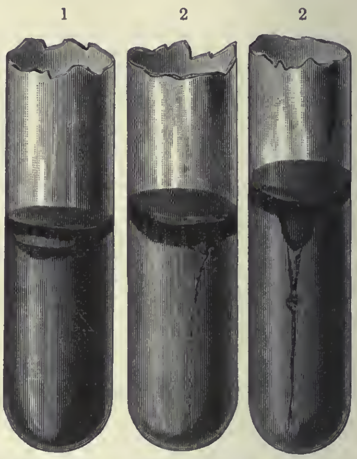
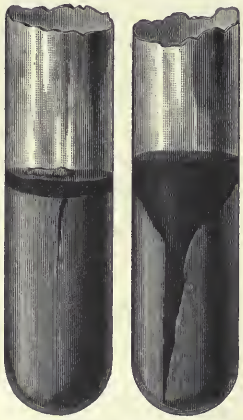
[1] American Journal of the Medical Sciences, January, 1888.



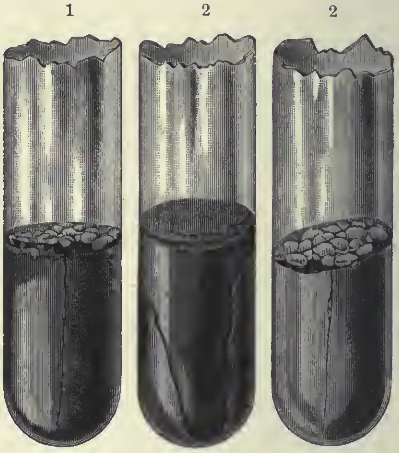
S. p. citreus. Growth after ten days. 1. Control-tube. 2. ½ per cent. acetanilid-gelatin tubes.



S. p. aureus. Growth after ten days. 1. Control-tube. 2. ½ per cent. acetanilid-gelatin tubes.



S. p. citreus. Growth after nine days in the acetanilid-gelatin and control.



S. p. aureus. Growth after nine days in 1 per cent. acetanilid-gelatin and control.

Experiment IV.—Identical with the preceding, except that 0.025 gramme, or ½ per cent., of acetanilid was used. In this instance all the acetanilid went into solution upon boiling, none ever crystallizing out again, and the gelatin remained to the end as clear as if nothing had been added to it.

Fourth day. All the control-tubes are growing rapidly, and one of the citreus and one of the aureus tubes containing acetanilid have begun to develop.

Eighth day. All the aureus and citreus tubes containing acetanilid show a slight growth.

Tenth day. The growth above mentioned has increased but slightly. The control-tubes, however, are much liquefied. (See photographs of aureus and citreus tubes taken to-day.)

Sixteenth day. But little increase in the growth of the aureus and citreus tubes containing acetanilid, and as yet little or no liquefaction. Very slight growth along the track in the bacillus pyocaneus tubes, except control, which is rapidly liquefying.

Thirtieth day. The aureus and citreus tubes have continued to develop slowly, and the gelatin is now about one-quarter liquefied. In the bacillus pyocaneus tubes there is still only a delicate line of growth along the needle-track, the control, of course, being entirely liquefied. In this experiment, also, the non-liquefying coccus was used, and on the thirtieth day the difference between the acetanilid- and control-tubes was marked. In the former, although the surface-growth was decided, it was by no means so extensive as in the latter. The same may be said of the track-growth.

It is interesting to note that in these series of experiments the inhibitory action of acetanilid was much more marked in the 1 per cent. than in the 5 per cent. or 10 per cent. tubes. It also seems evident that the growth of the bacillus pyocyaneus is much more affected by the presence of acetanilid than the other organisms. The more extensive development of staphylococcus pyogenes aureus and staphylococcus pyogenes citreus in the 5 per cent. and 10 per cent. tubes compared with the 1 per cent. tubes is inexplicable.

Several other experiments were made with 1 per cent. and ½ per cent. acetanilid gelatin, the only difference being that the gelatin was solidified on the slant. In some instances the tubes were kept upright, and in others they were kept at the solidifying angle. The inoculation in these cases being a surface one, the growth of the organism (staphylococcus pyogenes aureus alone was used) was more extended, as was anticipated, but liquefaction took place only slowly in the ½ per cent. tubes, while the 1 per cent. tubes did not liquefy at all, the growth remaining only a surface one.[1]

Similar experiments were performed with 1 per cent. and ½ per cent. acetanilid agar-agar. In the 1 per cent. tubes, as in the case of the gelatin, some of the acetanilid gradually crystallized out on cooling, but the ½ per cent. tubes remained perfectly clear. Line-inoculations with staphylococcus pyogenes aureus were made upon the surface from a liquefied gelatin culture, sometimes using a small looped and sometimes a straight needle. There was always a rich development in the

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[1] The experiments with the 1 per cent. oblique acetanilid gelatin tubes are not final. The tubes were only under observation for ten days, and up to that time liquefaction had occurred in only one of these tubes, and here but very slightly. At this period the room became overheated, melting the gelatin and spoiling the experiment. Unavoidable circumstances prevented its being repeated.

½ per cent. tubes, although this was much slower than in the control-tube, while in the 1 per cent. tubes there was no growth, or, at most, it was only meagre.

Experiment V.—Three agar-tubes were inoculated by drawing a small loopful of a partially liquefied culture of streptococcus pyogenes aureus once over the surface of each tube. The agar was then covered in two cases lightly, in one quite thickly with acetanilid. A control was also made and all tubes were left in an upright position at the room temperature.

Third day. Excellent growth on the surface of control-tube; others show no growth.

Fiftieth day. Acetanilid-tubes still show no growth.

This experiment was repeated several times, occasionally placing only a very thin layer of acetanilid on the surface of the agar. Staphylococcus pyogenes aureus was the organism generally used, but in one case the tubes were inoculated with the unidentified coccus. Sometimes the inoculation was made in a line only, and again it was made over the whole surface of the agar. The tubes were kept under various conditions, both in an upright position and at the angle of solidification; sometimes at the temperature of the room, sometimes at 37° C. The results were invariably the same: the tubes having only a thin layer of acetanilid upon the surface of the agar occasionally grew slightly for a few days, after which development ceased. In one instance, where the whole surface of the agar was inoculated and afterward covered here and there with a light layer of acetanilid, growth took place up to the crystals, but here it always ceased.

The results are quite different if oblique gelatin is used instead of agar, as the following experiment will show:

Experiment VI.—Several tubes of oblique gelatin were inoculated with streptococcus pyogenes aureus from a partially liquefied culture. The inoculations were made with a small looped needle, great care being taken to inoculate only the surface in a line and to avoid cutting the medium. The gelatin in these tubes was then covered with different thicknesses of acetanilid and the tubes with a control were left in an upright position.

Second day. Control-tubes growing rapidly and already liquefying, so that a little fluid is collecting at the bottom of the gelatin. Acetanilid-tubes show no signs of growth.

Fifth day. The acetanilid-tubes show evidence of growth, the gelatin being slightly and unevenly depressed along the inoculating-line. The gelatin in the control-tube is so much liquefied that it no longer retains its oblique position.

Tenth day. Acetanilid-tubes are so much liquefied that the gelatin no longer holds its oblique position.

This experiment was repeated several times; occasionally so much acetanilid was used that the space between the surface of the oblique gelatin and the glass was almost filled with it; again, only the thinnest possible layer of acetanilid was spread over the surface. Sometimes the tubes remained upright and sometimes at the angle of solidification, but the results were practically invariably the same: growth was generally first observed in the tubes containing the least acetanilid, but by the sixth day growth was visible, as a rule, in all the tubes, the control-tubes of the same date, however, being well advanced.

In these experiments the growth is entirely referable to the medium employed. Gelatin being rather soft, the organisms are able to penetrate and, by their peculiar chemical action, to liquefy it, thus to a certain extent freeing themselves from direct contact with the acetanilid. Although the growth is inhibited to a great extent, liquefaction having once begun, the development is very rapid.

In the case of agar the circumstances are quite different. It is impossible for the organisms to penetrate or liquefy this firm medium, and, although a slight growth may take place, the organisms must always be more or less in close contact with the acetanilid. It might be that in this instance the bacteria are mechanically separated from the medium.

This could easily have taken place when shaking the tube to distribute the acetanilid over the surface, but it is exceedingly unlikely, since, in similar experiments with gelatin, such a separation could also have occurred, but it never did, as shown by the subsequent growth.

Experiment VII.—Five per cent. of acetanilid was added to three tubes, each containing 10 c.cm. of bouillon. The bouillon was then boiled and the acetanilid dissolved, much of which afterward crystallized out upon cooling and sank to the bottom of the tubes. These and also three control-tubes, containing each 10 c.cm. of bouillon, were then inoculated with a medium sized loopful of staphylococcus pyogenes aureus from a liquefied gelatin-culture. After forty hours gelatin plate-cultures were made, each containing a small loopful of bouillon. The plates made from the control-tubes produced countless colonies, whereas the colonies on the plates made from the three acetanilid-tubes numbered 640, 160, and 133. Plates were again made in the same manner on the sixth day, and the controls again gave countless colonies, while the acetanilid-tubes gave between 5000 and 10,000.

It is interesting to compare this experiment with a similar one performed by Dr. Jeffries with iodoform:

"To three tubes, each containing ten cubic centimetres of bouillon, was added 5 per cent. of iodoform, and then one drop of water with staphylococcus pyogenes aureus. Three more tubes exactly the same, except for the iodoform, were prepared, and all six stood in the same rack. At the end of twenty-three hours agar-agar plate-cultures, each containing one drop of bouillon, were made. The plates made from the tubes with iodoform came very thick, too thick to count, yet distinct; those made from the simple bouillon were just like ground glass.

"The above was repeated three times, but the drop of bouillon was diluted in 10 c.cm. of water, a drop of which was taken for the plates. These could be counted, and gave from two to four times as many colonies in the plates made from the simple bouillon as in those from iodoform. For instance, one lot gave me 20,000, 20,000, 21,000, as compared with 5000, 6000, and 7000."

Comparing these two experiments, it is again evident that acetanilid has a much greater antiseptic action than iodoform. It was, for instance, a simple matter to count the colonies on the plates made with a small drop of bouillon after forty hours' growth, while Jeffries was obliged to dilute his drop of bouillon in 10 c.cm. of water before colonies could be counted. Indeed, in none of his experiments, did Jeffries obtain any marked inhibitory action to the growth of the bacteria caused by iodoform, and he was forced to conclude, as many other investigators have also done, that iodoform, from a laboratory standpoint, is only to a very slight degree an antiseptic.

In this experiment another interesting point was developed, namely: while the control-tubes were quickly clouded by the growth of the organisms, the acetanilid-tubes remained to the end almost perfectly clear; and while the scum forming upon the surface of the control-tubes was decidedly yellow, a similar scum, but forming much later, on the acetanilid-tubes was almost white. This loss of color when staphylococcus pyogenes aureus is grown in the presence of acetanilid was also observed by Lépine.

The following experiment is interesting as showing how acetanilid, when present even in very minute quantities, inhibits the development of staphylococcus pyogenes aureus.

Experiment VIII.—A saturated solution of acetanilid was made by allowing the crystals to remain in cold distilled water for several days. To several bouillon-tubes was then added an equal volume of this solution, to others one-half the volume. To a control tube was added an equal volume of water. All the tubes were then inoculated with staphylococcus pyogenes aureus.

Twenty-four hours. Control-tube is cloudy, the others clear.

Third day. All the tubes are cloudy.

The foregoing experiments demonstrate that acetanilid has a decided inhibitory action upon the growth of bacteria, and that it is, therefore, an antiseptic.

The following experiments were then undertaken to ascertain if acetanilid was also a germicide:

Experiment IX.—To 5 c.cm. of the saturated solution of acetanilid (saturated in the cold, as in Experiment VIII.) was added a large loopful of a liquefied gelatin-culture of staphylococcus pyogenes aureus. The tube was then well shaken, to insure a thorough separation of the organisms and an even distribution of them through the fluid, and immediately a large loopful of the mixture was spread over the surface of an agar-tube. For five successive days a similar loopful was carried over to agar, shaking the acetanilid-tube well each day. Agar-tubes were used instead of the gelatin plates, as the developing colonies can be counted nearly as well, and by placing the agar-tubes in the thermostat results are much more quickly obtained. The colonies upon the agar gave the following count:

Agar-tube made immediately after mixing = countless colonies.
“ “ after 24 hours = 200 colonies.
“ “ “ 2 days = 60 “
“ “ “ 3 “ = 27 “
“ “ “ 4 “ = 5 “
“ “ “ 5 “ = 1 colony.

Experiment X.—Similar to Experiment IX., except that 5 c.cm. of a saturated solution of acetanilid (saturated by boiling, and therefore much stronger) were used:

Agar-tube made immediately after mixing = countless colonies.
“ “ after 17 hours = countless colonies, but less than above.
“ “ after 2 days = 130 colonies.
“ “ “ 3 “ = 62 “
“ “ “ 4 “ = 38 “

A similar experiment to the above, using 5 c.cm. of a supersaturated solution of acetanilid (saturated by boiling) gave a like result.

These experiments would seem to indicate that acetanilid has no marked germicidal action, the gradual decrease in the number of organisms being due to starvation.[1] In order to prove this supposition, similar experiments were made, using 5 c.cm. of boiled distilled water without acetanilid, and the average results of several experiments are as follows:

Staphylococcus pyogenes aureus in distilled water.

Agar-tube made immediately after mixing = countless colonies.
“ “ after 24 hours = 400 colonies.
“ “ “ 2 days = 210 “
“ “ “ 3 “ = 100 “
“ “ “ 4 “ = 60 “

It should be borne in mind that the figures quoted in the above experiments cannot be directly compared. Although the same platinum-loop was used in all these experiments, it is impossible to imagine that the drop carried over in this loop was always of the same size. Slight variations in the size of this drop would make a difference of many thousand organisms, and therefore the number of colonies developing upon the agar from day to day might differ very widely even in several experiments performed in exactly the same manner. Nevertheless these experiments sufficiently demonstrate that the gradual diminution in the number of organisms was not due to the presence of acetanilid, but to starvation, since similar results were obtained when distilled water alone was used.

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[1] If, for instance, the same experiment is performed, substituting 5 c.cm. of a 0.25 per cent. solution of KOH for the acetanilid solution, no colonies are obtained after three hours. In this case the death of the organisms is not due to starvation, but to the germicidal action of KOH, weak as it is.

Experiment XI.—From all the gelatin tubes containing acetanilid which were used in the foregoing experiments, and in which the little growth which did take place soon ceased, fresh gelatin-cultures were made after fifty days.

The fresh cultures were made from the 10 per cent., 5 per cent., and 1 per cent. acetanilid tubes inoculated with bacillus pyocyaneus remained perfectly sterile; but the cultures made from the ½ per cent. acetanilid-tube inoculated with bacillus pyocyaneus gave a typical growth.

In the case of the aureus and citreus tubes containing acetanilid, and the tubes inoculated with the unidentified coccus, the new cultures grew rapidly and typically in every instance.

This experiment indicates that acetanilid may have a very slight germicidal action, but it must be very limited, since bacillus pyocyaneus was alone destroyed, and this presumably only after several weeks.

Experiment XII.—From the agar-tubes in which no growth was visible after thirty to thirty-eight days, and which had been inoculated with staphylococcus pyogenes aureus (both line- and surface-inoculations), and then covered with different thicknesses of acetanilid, fresh cultures were made. The acetanilid was first partly lifted from the surface of the agar, a needle was then rubbed about where the organisms were supposed to be, and this needle then transferred to fresh medium. In nearly every instance a typical growth of staphylococcus pyogenes aureus resulted.

Another series of experiments was begun which consisted of mixing a drop of bouillon, made turbid with staphylococcus pyogenes aureus, with various amounts of dry acetanilid, and from time to time making cultures from this mixture. These experiments were unavoidably cut short, but the results as far as obtained only added more evidence to prove that acetanilid is not, or is at least only very slightly, germicidal.

Conclusions.—Although acetanilid has not been very widely employed as a surgical dressing, in the cases where it has been used, the results have been so successful that its superiority over iodoform seems very probable, and its use instead of the latter indicated. There is no danger of poisoning from absorption of acetanilid, and the utter absence of odor is an additional plea for its substitution for iodoform as a dressing.

Laboratory experiments uphold the clinical proof of its value as a surgical dressing, but since laboratory experiments are really no evidence of what goes on in the body the only conclusions to be drawn from the foregoing experiments are:

1. That acetanilid is probably to a very slight extent a germicide.
2. That acetanilid is decidedly an antiseptic.
3. That, as an antiseptic, acetanilid is far superior to iodoform, and that certainly from a laboratory, and probably also from a clinical, standpoint its substitution for the latter seems warranted.

THE MODERN ASPECT OF INDICANURIA.

WITH SPECIAL REFERENCE TO THE RELATION BETWEEN INDICAN AND THE ACIDITY OF THE GASTRIC JUICE.

By Charles E. Simon, B.A., M.D.,
OF BALTIMORE.

(Continued from page 63.)

To pass on now to a consideration of cases in point, it will be well to take up first in order those in which the presence of free hydrochloric acid could not be demonstrated in the gastric juice.

We here meet first with cases of carcinoma of the stomach:

Hennige (*Deutsch. Arch. für klin. Med.*, 1879, vol. xxiii. p. 271) observed two cases, in both of which the indican was greatly increased in amount, one of these being at the same time complicated with carcinoma of the liver.

Senator (*Centralblatt für die med. Wissensch.*, 1877, pp. 357, 370, and 388; see also *Berlin. klin. Wochensch.*, 1877, vol. xiv. pp. 583–584), speaking of thirteen cases of carcinoma, states that in all of these, even shortly before death, when very little or no food was taken, large quantities of indican were found.

Haeberlein (*Deutsch. Arch. für klin. Med.*, 1889, vol. xlv. p. 339) finds as the result of his examinations of fifty-one cases of carcinoma no increased indicanuria in eleven cases, a moderate increase in twenty-nine, and a very intense indicanuria in eleven cases.

De Vries (*Ueber das Indican im Harn und seine diagnostische Bedeutung*, Dissert., Kiel, 1877) cites one case of colloid cancer of the stomach, in which a violet color resulted, indicating beyond a doubt an increased elimination of indican.

Ortweiler (*Mittheil. aus der med. Klinik zu Wuerzburg*, 1886, vol. ii. pp. 155–188), in an examination of seven cases of carcinoma ventriculi, states that the indican-reaction always was very intense, more so than in any disease of the stomach.

Brieger (*Zeitsch. für physiol. Chemie*, vol. ii. p. 256), in an examination of two cases of carcinoma, observed an abundant elimination of indican.

Wasbutzki (*l. c.*) describes five cases of carcinoma of the stomach in which the indican-reaction was noted as present, and mentioned as being increased in one case, the hydrochloric acid being absent in all cases.

To these cases I wish to add the following observations of my own:

Case I.—M. B., aged fifty-four years, carcinoma of the stomach of nine months' standing; profound cachexia and general prostration; tumor palpable; repeated attacks of coffee-ground vomiting; death in coma; no free HCl; indican-reaction most intense.

Case II.—L., aged fifty-eight years, carcinoma; death after two years; tumor palpable; profound cachexia and prostration; death in coma; no HCl; indican-reaction most intense.

Case III.—G., aged sixty-four years, carcinoma; tumor palpable; profound anæmia, closely simulating pernicious anæmia; no free HCl; indican-reaction intense.

Case IV.—H., carcinoma of the stomach and cæcum. An artificial anus was established at the lower end of the ileum, the cæcum having been excised for carcinoma. The patient died a few days later from shock, the sutures having broken loose in consequence of a severe attack of coughing, the intestines being expelled through the wound to an extent of two or more feet. It was expected that no indican, or merely a trace, would be present, the entire colon being eliminated. Instead of this, however, an enormous quantity was obtained, and the diagnosis of cancer of the stomach made. This was fully confirmed at the autopsy.

The gastric-juice examination before the operation showed the absence of free HCl acid.

In addition to these four cases of cancer, in all of which an intense indicanuria existed, associated with the absence of free HCl, it will be well to report in this connection several cases of functional anachlorhydrie. The histories are given in detail, having not as yet been reported, and the small amount of material in the literature, according to Ewald, calling for the publication of further observations.

Case V.—M. G., aged twenty-three years, hysterical vomiting, associated with anachlorhydrie and the presence of large amounts of indican in the urine.

For the past twelve years the patient, in whose general history or antecedents there is nothing special of note, has been subject to vomiting, which occurred almost daily. She had been working in a factory for many years, doing piecework, and, although she repeatedly gave up this occupation and underwent medical treatment, no improvement, or at least no improvement exceeding three to four weeks, resulted. The vomiting was not preceded by nausea, and it occurred independently of the taking of food; no special kind of food, moreover, could be said to disagree, tomatoes and candies, for example, being frequently well borne, while white of egg, milk, beef, soup, etc., would be followed by vomiting soon after. The vomiting finally was, to a certain extent, under the control of the will, so that her friend, after I had informed the latter of what I considered as the true nature of the case, was frequently able to prevent her from vomiting by walking her up and down the room, wrangling with her, teasing her, etc. Every morning also the girl was in the habit of "having a good cry," as she said, frequently lasting for a quarter of an hour, or even longer, for which she could assign no special reason. The general impression of the girl was that of a hysterical person, but not of what is ordinarily termed a nervous person.

Other symptoms, beyond a slight tendency toward constipation, were not complained of; she had lost a good deal of flesh lately, but did not worry particularly over her condition. She had a wish to get well, so as to be able to work again, but actually did not appear to care very much, although her friends informed me that she was very "blue" at times at having been ill so long.

When I first saw the patient, a blonde, in the fall of 1892, she was fairly well nourished, slightly anæmic, presenting no special abnormalities on inspection. Heart and lungs were normal, as also the entire abdomen, there being no points of tenderness on palpation, no evidence of dilatation or atony, etc.

The gastric juice, examined one hour after Ewald's test-breakfast, taken at my office (which she was able to retain), showed a normal process of digestion; free HCl, however, was absent; there was a faint Uffelmann's reaction; the total acidity was 56.

The urine was light-yellow in color, fairly abundant, of 1012 sp. gr., acid, containing a large amount of indican; no special increase in the amount of uric acid, no sugar, and no albumin. A microscopical examination was negative.

The patient was electrolyzed daily over the gastric region with a strong faradic current for thirty minutes; tr. nucis vomicæ in fifteen to twenty-five-drop doses three times daily was ordered. I fed the patient for the first two weeks on small amounts of iced milk, frequently repeated, and raw scraped beef in increasing amounts. On this diet the patient did fairly well, when I allowed her a more liberal diet, and at the expiration of three months she had gained twenty-eight pounds in flesh and was free from vomiting. Since that time she has been under my constant observation (not as a patient), and considers herself as perfectly well.

Her gastric juice, when discharged, contained a very small amount of free HCl; the indican in the urine is still present in a somewhat increased amount, but far less than formerly.

Case VI.—M. H., aged twenty-seven years. The only points of interest in this girl's former history are the existence of a chlorosis, which occurred four years ago, and for which she was, not very successfully, treated with Blaud's pills, the improvement being a very slow one, and not so well marked as is usually seen, probably owing to the unhygienic surroundings under which the patient was obliged to live—*i. e.*, doing work in a workingmen's dining-saloon.

The girl, a blonde, is moderately well nourished, but decidedly anæmic. She complains of frequent pains in the abdomen, an entire want of appetite, occasional vomiting, no nausea, rumbling in the bowels, etc., for several years.

A physical examination of chest and abdomen revealed no abnormalities. A vaginal examination, made several years ago under ether, when the same symptoms existed, was likewise negative.

The gastric juice obtained one hour after Ewald's test-breakfast, and six hours after Riegel's meal, showed the following: There were no remnants of Riegel's meal; the bread was fairly well digested; the amount of juice obtained about 50 c.cm.; acid in reaction; the total acidity, 58; free HCl absent; strong Uffelmann's reaction; no fatty acids. Potassium-iodide could not be demonstrated in the urine four hours after the taking of a Günzburg potassium-iodide and fibrin package.

The urine was of a normal yellow color, clear, moderately acid, of a specific gravity of 1025; it contained no albumin, no sugar, no increase in the amouut of uric acid, and a mere trace of indican.

The treatment ordered in this case was essentially the same as in Case V. Two weeks later the first trace of free HCl could be demonstrated in the gastric juice, with a feeble Uffelmann's reaction and a fair increase in the amount of indican.

The reason which I shall here assign for this apparent incongruity—*i. e.*, anachlorhydrie associated with a normal amount of indican—is the same which Wasbutzki has offered as an explanation of the two cases of anachlorhydrie noted by him, which were associated with no increased, but rather with a diminished elimination of conjugate sulphates—namely, that the antifermentative action of the free HCl had been taken up, as it were, vicariously, by another acid, and in both of his cases, as well as my own, by the lactic acid. The diminution in the quantity of the latter, associated with the appearance of free HCl, in mere traces, however, and an increased indicanuria, which was observed in my own case, as shown above, appears to me further to strengthen this view.

In two cases occurring in the practice of Dr. Henry Salzer, of this city, I was, with him, able to observe a similar condition, where anachlorhydrie, in the presence of much lactic acid, was associated with a complete disappearance of indican from the urine.

Case VII.—This case, which I owe to a verbal communication of Dr. Salzer, occurred in a young woman, whose gastric contents had been examined shortly before the onset of an acute attack of anachlorhydrie, and had revealed a normal amount of HCl, while an examination of the urine at the same time showed no increase in the amount of indican. During the twenty-four hours following a high degree of ungratified sexual excitement, a complete loss of HCl, and, going hand-in-hand with the same, an enormous increase in the amount of indican was noted. It was possible in this case to exclude definitely other causes that could have brought about such a condition.

In this connection it may be mentioned that Ultzmann (*l. c.*) not infrequently observed an increased indicanuria in various neuroses. He thus states that in masturbators occasionally large quantities of indican are found in the urine, the pollutions even of such individuals producing stains in the linen, which appear blue or violet at the edges, when dry, and that after excesses in venery, as well as after sexual excitement in general, not infrequently large amounts of indican are found, and that such a condition is by no means rare in nervous and hysterical women.

To pass on now to a consideration of the cases of acute gastritis and gastro-intestinal catarrh, meaning thereby that form which is essentially produced by dietetic errors, be they referable to overeating, to overdrinking, or to the ingestion of food improperly prepared, or individual articles of food, which, owing to an idiosyncrasy on the part of the individual, are invariably followed by gastric distress, but which may also be produced by cold, such as the eating of large amounts of ice-cream, the drinking of much ice-water, etc., and, finally, the direct exposure of the entire body, or parts thereof, particularly the abdomen, to cold draughts and the like.

Free HCl in such cases is probably always absent, or present in greatly diminished amount at least.

Ortweiler (*l. c.*) found the indican always increased in four cases (the entire number studied by him in this direction), one of which was referable to the ingestion of beer in excessive amounts. He states that in the acute gastro-intestinal catarrh, which he was always able to produce in his own person by the drinking of large quantities of beer, the indican was invariably eliminated in increased amount.

Hennige (*l. c.*), having examined a large number of these cases, states that increased indicanuria was observed almost without exception, and that the degree of indicanuria essentially ran a parallel course to the intensity of the pathological process.

DeVries (*l. c.*) speaks of four cases of acute gastro-intestinal catarrh, in all of which much indican was observed in the urine.

The number of such cases recorded in the literature in which the indican elimination was studied is thus as yet very small; to these I may add my own observations:

Case VIII.—B. Following the ingestion of large quantities of beer, on a hot summer's day, the typical picture of an acute gastro-intestinal catarrh resulted. In the gastric juice no free HCl could be demonstrated; Uffelmann's reaction was feeble; no fatty acids; very much indican in the urine. This condition continued for several days, the clinical symptoms disappearing, together with the excessive elimination of indican.

Case IX.—The patient, a married lady, aged fifty-five years, whenever attending to preparations for company at dinner invariably excited herself to such a degree that the meal of which she subsequently partook was always followed by a most intense gastritis, notwithstanding the fact that she ate but very little, and of what may be considered as a normal quality of food. In the stomachic contents not a trace of free HCl could be demonstrated, while large quantities of indican were observed in the urine, the condition persisting for two or three days.

Case X.—Annie D. *Epilepsy.* This case will be reported in detail elsewhere. Suffice it to say at this place that an epileptic attack in her case almost invariably followed a decided error in diet, preceded by the typical picture of a subacute gastritis; the urine at such times always contained large amounts of indican.

Case XI.—In my own case the exposure of the abdomen to the cool or cold draughts of the early morning during the summer-time, when sleeping uncovered, is invariably followed by an intense gastro-intestinal catarrh, at times even associated with vomiting. The vomited material, which I have frequently examined, contained no free HCl, while the urine was actually loaded with indican.

In this connection also should be mentioned the high degree of indicanuria, so frequently, indeed, I may say constantly, observed in the gastro-intestinal type of influenza.

It has been shown by Manassein (Virchow's *Archiv*, vol. lxx.) that in animals during fever the secretion furnished by the stomach is deficient in HCl, an observation which was confirmed by Hoppe-Seyler, who was able to demonstrate that in fever the amount of HCl also diminishes in man. It should not be imagined, however, that it is the elevation of temperature which produces this condition and the increased elimination of indican, it having been proved by Jaffe and others that such is not the case; and it will be most correct, probably, to refer this anomalous condition to the resorption of infectious material, ptomaïnes, toxalbumins, or substances belonging to the aromatic and fatty acid series, their partial elimination through the stomach, which has been shown to hold good for the poison of cholera, the poison of various snakes, hydrophobia, etc., and the irritation thus produced upon its mucous membrane and probably the nerve-centres. It is true that increased indicanuria is not observed in all cases of acute febrile disease, a point which, however, likewise holds good for the secretory powers of the stomach, the question whether subacidity, anacidity, and increased elimination of indican shall occur, being probably largely controlled by the question as to how far the secretory power is affected by the infectious material circulating in the blood. From my own observations, there can be no doubt that in the gastro-intestinal type of influenza, as well as in typhoid fever, the secretory power of the stomach is greatly enfeebled, while in intermittent fever, pneumonia, and advanced phthisis, unless marked gastro-intestinal lesions exist, a normal secretion is usually furnished by the stomach, associated with a normal or only slightly increased elimination of indican.

Case XII.—B. *Influenza.* On the first day of the disease the vomited material contained no free HCl; the indican in the urine was enormously increased. On the third day of the disease vomiting occurred again, with no free HCl, and a large amount of indican.

Case XIII.—L. S. *Influenza.* In the vomited material on the third day no free HCl; very much indican in the urine.

Case XIV.—H. S. *Influenza.* No vomiting, but complete anorexia, slight diarrhœa, profound prostration; large amount of indican.

Case XV.—M. H. *Influenza.* The same as Case XIV.

Case XVI.—E. G. *Influenza.* Vomiting on second day; no free HCl; much indican.

Case XVII.—G. V. *Influenza.* High fever, cough, anorexia, vomiting on second day; material not examined; much indican.

Case XVIII.—O. H., Jr. *Influenza.* High fever; profound prostration; nausea; moderate diarrhœa; much indican.

Case XIX.—E. P. *Influenza.* Vomiting on first day; no free HCl; very large amount of indican.

Among the eighty cases of typhoid fever which I have examined, increased indicanuria was observed in every instance, whether diarrhœa existed or not, at some stage of the disease. With this observation the results obtained by others, such as A. Robin, in his large series of cases; De Vries, in the six cases which he examined; Ortweiler, in his twenty cases; Gubler, in his extensive experience at the hospitals of Paris; Hennige, who found an increased indicanuria in the fastidium and reconvalescence of typhoid fever; Senator, and others stand in perfect accord.

To these cases I have still to add one of acute toxic gastritis, which I have reported in the *Medical Record*, 1894, being a case of acute gastro-enteritis, due to poisoning by mustard:

Case XX.—S. G. The patient, having taken a cupful of mustard, to produce an abortion, stirred up with vinegar, was seized with intense vomiting and sanguinous diarrhœa. The vomited material was free from HCl (repeated observations), while the urine was actually loaded with indican. As the general condition improved and the patient recovered, the indicanuria gradually became less marked, and ultimately returned to the normal.

Ortweiler's one case, in which no increase could be noted, must certainly be excluded, being a case of acute muriatic-acid poisoning.

In tabulating the cases of anachlorhydrie, set forth above, we find the following:

Observer.	No. of cases.	Diagnosis.	Indican increased.	Indican absent or not increased.
Hennige	2	Carcinoma	2	0
Senator	13	“	13	0
Haeberlein	57	“	40	11 not incr.
De Vries	1	“	1	0
Ortweiler	7	“	7	0
Brieger	2	“	2	0
Wasbutzki	5	“	1	4 not incr.
Simon	4	“	4	0
Total . .	91		70	15
Simon	3	Hysteria	2	1
Ortweiler	4	Acute gastritis	4	0
De Vries	4	Acute gastro-enteritis	4	0
Simon	12	“ “ “	12	0
Total . .	20		20	0
Grand total .	114	Anachlorhyd.	92	16

In studying this table we find that an increased elimination of indican has been noted in seventy out of ninety-one cases of carcinoma, in other words, in 76.93 per cent.; in two cases of three, *i. e.*, in 66.66 per cent. of hysterical anachlorhydrie; and in all of the twenty cases of acute gastro-intestinal catarrh. Indicanuria of increased degree would thus occur in 80.7 per cent.

In the fifteen cases of carcinoma in which the indican was merely noted as being present, or as not being increased in amount, it is, of course, impossible to assign a definite cause for this fact; but one cause at least that might be surmised, is the one detailed above under Case VI., and one indeed which Wasbutzki himself has proposed as an explanation of the diminished elimination of conjugate sulphates observed by him. At the same time, however, it would be well if more care be taken by observers, finding deviations from what by others has been established as the norm, in the description of individual cases, and the methods employed. Both have been neglected, particularly by Haeberlein. The fact remains, nevertheless, that in cases of carcinoma—*i. e.*, in cases where free HCl is notoriously absent—an increased elimination of indican is noted in a very large percentage of cases, and may be regarded as the rule.

Further observations will have to demonstrate the state of affairs in cases of functional anachlorhydrie, as my own cases are, of course, not sufficiently numerous to warrant any very definite conclusion, although it would appear that, in the absence of an excessive formation of lactic acid, the same rule holds good, namely that an absence of HCl goes hand-in-hand with an increased elimination of indican.

That this is the rule in cases of acute gastro-intestinal catarrh is apparent from the table above.

To pass on now to a consideration of chronic gastritis, collecting under this heading all those cases in which free HCl is, so to speak, habitually diminished or absent, excluding, of course, all neuroses, as well as carcinoma and ulcus:

Ortweiler describes five cases of chronic gastritis, in all of which indican was found in increased amount.

Senator does not detail any cases under this particular heading, but states that patients who eat but little or not at all, and perhaps vomit the little that they have eaten, or digest the same badly, frequently pass enormous quantities of indican in the urine.

I myself have observed increased indicanuria in the following cases:

Case XXI.—H. J. Right-sided movable kidney; general gastroenteroptosis; constipation of high degree; irregular appetite, bloated feeling after eating, much belching, palpitations of the heart, hot and cold flushes, vertigo, etc. The indican in this case was present in large amounts.

Case XXII.—Z. J., aged seventy years. The patient complains of diarrhœa alternating with constipation for years; the appetite is capricious; there is nausea, rarely vomiting; vertigo; epigastric distress; a disagreeable taste in the mouth, etc. The indican is very much increased.

Case XXIII.—H. S. The patient, a lady aged sixty two years, has been confined to her bed for many years, being a nervous invalid. She has been very much over-fed, without having taken any exercise whatsoever; constantly complaining of symptoms largely referable to the gastro-intestinal tract. The indican is always very much increased.

Case XXIV.—Mrs. K. Similar history to Case XXIII. Nervous invalid; highly hysterical for many years; marked gastro-intestinal symptoms; indican very much increased.

Case XXV.—Chronic gastritis with atony and a mild degree of dilatation. Only traces of free HCl in the gastric juice; much indican.

An increased elimination of indican in various digestive diseases has thus been frequently observed; and Ortweiler, whose clinical studies in indicanuria are most excellent, thus summarizes his work: "We see, then, that an increased elimination of indican quite regularly occurs in all diseases of the stomach which are associated with alterations in the secretion of gastric juice, with a diminished peristalisis and abnormal fermentative processes, while an increased indicanuria could not be demonstrated in acute toxic gastritis." That these conclusions are essentially correct we have seen; but the observation of Ortweiler, that increased indicanuria is not observed in cases of acute toxic gastritis, certainly does not hold good. (See Case XX.)

That a diminished peristalsis, moreover, is productive of an increased elimination of indican can also only be said to hold water when restricted to cases of mechanical obstruction somewhere in the course of the small intestine, a fact which was first pointed out by Jaffe (Virchow's *Archiv*, *l. c.*), who was able to demonstrate the high value of indican in cases of ileus, a statement, moreover, which since that time has been repeatedly confirmed.

In one case of this kind which I had occasion to observe myself:

Date.	Total H_2SO_4.	Combined H_2SO_4.	Mineral H_2SO_4	A : B.
March 10, 1893,	0.169 per cent.	0.0635 per cent.	0.1055 per cent.	1.66

Case XXVI.—In which the obstruction was high up in the small intestine, and in which no stool had occurred for three weeks, the amount of indican was enormous; indigo-red also being present in large quantities.

A similar result is seen in cases of acute diffuse peritonitis, some cases of acute circumscribed peritonitis, incarceration of herniæ of some standing, etc.

Obstruction of the large intestine, as well as diseases of the large intestine in general, on the other hand, have been definitely shown to be unassociated with any marked increase in the indicanuria, and if the latter should be observed under such conditions we may, at the same time, infer the existence of disease higher up.

For the sake of illustration, I here quote two experiments of Jaffe's, in one of which the small intestine and in the other the large intestine were ligated:

1. Ligation of small intestine.

Urine before operation:	Dec. 29–31,	2800 c.cm. to	8	mgrms.	of	indigo.
	Jan. 1–2,	2300 c.cm. to	11.5	“	“	“
Urine after operation:	1st day,	1010 c.cm. to	12.5	“	“	“
	2d day,	400 c.cm.	76	“	“	“
	3d day,	370 c.cm.				
	4th day,	550 c.cm.	88	“	“	“
	5th day,	525 c.cm.				
	6th & 7th day,	1300 c.cm. to	22.1	“	“	“

2. Ligation of the large intestine. (Colon descendens.)

Before operation but very little indican, while after the ligature had been applied the daily amount varied between eight and nine mgrms. only.

In cases of simple constipation, viz., coprostasis, no increased indicanuria is observed, and Ortweiler himself, although he makes a statement to the contrary, does not cite a single case in support of this view, having at the same time detailed all his other cases.

Jaffe says that he has examined the urine of patients suffering with simple constipation innumerable times, and amongst these a case of two weeks' standing (no stool for two weeks), without ever having been able to demonstrate an increased elimination of indican.

De Vries cites several cases of coprostasis, but rarely has met with such associated with increased indicanuria. To illustrate the value of a quantitative estimation (even approximately) he cites one case in which no stool had occurred for eight days, and in which suspicious material was vomited, so that the question as to the advisability of an operation for suspected intussusception was raised, cathartics also having been of no avail when a spontaneous movement occurred. There had been very little indican in this case, and the diagnosis of coprostasis was made on this basis, a small amount of indican being a thing unheard of in ileus.

I, myself, have examined a large number of cases of simple constipation, one of ten days' duration, and have also but rarely met with increased indicanuria; and if this was noted, the increase was associated with symptoms pointing toward an abnormal condition of gastric digestion.

So much, at any rate, may be said, that, as a rule, and as a good broad rule, *an increased elimination of indican is not associated with constipation.*

In surgical cases, where the differential diagnosis may be called for between coprostasis and ileus, a small amount of indican may be regarded as speaking against ileus, and may be truly said to be a more valuable symptom in this connection by far than the absence of free HCl in carcinoma of the stomach. In medical cases there is, of course, never any objection to clear out the colon and repeat the indican-test a day or two later on if any doubt should exist. With an uncomplicated constipation, moreover, of two or three days' standing an increased indicanuria is never associated, while it may be so with one lasting for a longer period of time, when, however, it also never becomes intense.

Ortweiler says: ". . . . We may thus assume that all diseases of the stomach have a common basis—*i. e.*, the dyspepsia, and it having been established that dyspepsia frequently is referable to an altered condition of the gastric juice, and that in carcinoma it is especially the free HCl that is affected, we might expect that the indican should decrease after the administration of HCl or pepsin." He then goes on to state that he was able to produce a diminution in the amount of indican by means of HCl, and also by pepsin, in a case of carcinoma, the diminution in the latter case, however, being but slight. As far as the influence of pepsin is concerned upon the elimination of indican, this observation, as far as I know, has never been confirmed. More important, however, is the fact that he was able to produce a diminished elimination of indican in two cases of carcinoma and two cases of ulcer of the stomach by means of muriatic acid.

Ortweiler refers this action of the muriatic acid to its digestive, and not to its antifermentative, properties. It is not unlikely that such may be the case in some instances and to a certain extent, the amount of proteid material available for putrefactive processes being thereby, perhaps, diminished to some extent. That such processes will, however, only be prevented when there is an excess of free HCl present—*i. e.*, when all other affinities have become saturated—is a well-known fact, and we hence must still regard the degree of intestinal putrefaction as primarily depending upon the amount of free acid present, and can only secondarily look upon the digestive activity of the free HCl as a factor affecting intestinal putrefaction and the elimination of indican.

To summarize briefly, we have so far seen that:

1. The gastric juice of the normal individual possesses very marked antifermentative properties.
2. That these properties are referable to the presence of free HCl.
3. That the conjugate sulphates are invariably increased in cases of hypochlorhydrie and anachlorhydrie, and diminished in cases of hyperchlorhydrie, provided that in the absence of free HCl its antifermentative properties are not taken up by another acid, such as lactic acid.
4. That the indol production, or rather elimination, is constantly increased in cases of hypochlorhydrie and anachlorhydrie, it being remembered, however, that the action of the free acid here, also, may be taken up in the absence of HCl by lactic acid.

In other words, I believe the conclusion to be permissible that *the degree of acidity of the gastric juice may be directly judged by the elimination of indican in the urine.* That increased indicanuria is quite constantly associated with subacidity or anacidity we have seen. To demonstrate that a normal amount of free HCl goes hand-in-hand with a normal elimination it is only necessary to examine the urine of a perfectly healthy individual, or one whose digestive functions present no abnormalities whatsoever. For the sake of illustration I shall give a few examples:

CASE XXVII.—B., letter-carrier; normal case throughout; no complaints whatsoever; indican normal.

CASE XXVIII.—H., neurasthenia cerebralis; free HCl present in normal amount; indican normal.

CASE XXIX.—A. H., examined for life insurance and accepted; strong, healthy business man; indican normal.

CASE XXX.—E. H., case of eczema and slight neurasthenia; no digestive symptoms whatsoever; indican normal.

CASE XXXI.—Mrs. O., lumbago; no digestive symptoms; general health very good; indican normal.

CASE XXXII.—Mrs. Ch. J., neurasthenia; free HCl present in normal amount; indican normal.

CASE XXXIII.—F. St., male, hysteria; no digestive symptoms; free HCl in normal amount; indican not increased.

CASE XXXIV.—Mrs. B., hysteria; various digestive symptoms; gastric juice entirely normal; indican normal.

CASE XXXV.—J., male, hysteria; no digestive symptoms; gastric juice normal; indican normal.

In hyperacidity of the gastric juice the conditions do not lie quite so simple, and ulcer of the stomach must be regarded as an exception to the rule, the indican here being almost always present in increased amount.

Ortweiler thus records eight cases, in all of which the indican-reaction was intense and only exceeded by that observed in cancer of the stomach. He also records two cases of hæmatemesis, due to ulcer, in which the reaction was very intense; in fact, more so than in the absence of hæmatemesis.

Hennige mentions four cases of gastro-intestinal hemorrhage, the age of the patients varying between eighteen and thirty-one, which must probably be regarded as cases of ulcer, in all of which the indican was much increased.

Senator states that he met with increased indicanuria repeatedly in cases of ulcer, the reaction being, however, not so intense as in carcinoma, but especially intense when hemorrhages had recently taken place.

Why such should be the case I am unable to say at present, but since the indican-reaction is always mentioned as being more intense at times, when hemorrhages are taking place, or have recently occurred, this fact could possibly become the starting-point of an investigation. Unfortunately for this work, I have not been able to observe a single case of ulcer, these cases being certainly very much more common abroad than in our country, and I am therefore unwilling to enter upon any explanatory hypothesis.

In several cases of hypersecretio acida et continua, however, which I had occasion to observe, indican could not be demonstrated in the urine with the ordinary tests, and the same may be said of a large number of cases of nervous hyperacidity which I had been able to study under the supervision of A. Robin at LaPitié at Paris, and which has been very constantly observed by him.

Should any doubt, however, arise in a given case as to the presence of free HCl I can only say, from my personal experience, that this may always be cleared up, if the examination for indican is combined with the exhibition of a Günzburg potassium iodide and fibrin package.[1] A delayed potassium-iodide reaction associated with a negative or subnormal indican-reaction I have found, to judge from my own cases, to be indicative of anachlorhydrie, the antifermentative action of the gastric juice being taken up by lactic acid. The presence of much indican associated with a premature or normal potassium-iodide reaction I should upon a hypothetical basis, it is true, regard as a valuable symptom pointing toward the existence of an ulcer.

That ordinary constipation will not give rise to an increased elimination of indican I have already pointed out, and the same may be said to hold good for diarrhœa referable to a catarrhal condition of the colon.

There remains then merely to be considered the effect of the various articles of diet upon the elimination of indican.

Jaffe, working on dogs, found the degree of indicanuria to run a course essentially parallel to the amount of nitrogen ingested.

Salkowsky arrived at similar results, finding much indican in the urine of dogs after fibrin and meat, but none after gluten, in accord with Nencki's observation that gluten does not yield indol.

Peurosch (*Beitrage zur Lehre ueber die Entstehung des Indicans im Thierkoerper.* Dissert., Koenigsberg, 1877. Cited in *Cbl. fuer die med. Wissensch.*, 1878, p. 454), working under the guidance of Jaffe, found that in rabbits oats, potatoes, starch, and sugar have but little influence upon indican-production; fresh grass, but especially meat, produces a greatly increased indicanuria, and the addition of fat in such cases appears to favor its production.

The effect of diet upon the elimination of indican in man has received but very little attention. Personally I have found an increased indican-production after red meats, particularly beef and mutton, while chicken and fish do not appear materially to influence the same. The indican will almost disappear from the urine under a strict Kefir diet; milk and buttermilk have a similar effect.

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[1] For sale by Messrs. Hynson & Westcot, of Baltimore.

The green vegetables produce no increase, and the increase which is at times noted after the ingestion of large quantities of peas, beans, lettuce, potatoes, and bread is never very marked.

To summarize our results then:

1. The gastric juice possesses antiseptic and germicidal properties.

2. These properties are referable to the presence of free hydrochloric acid.

3. A subnormal amount of free hydrochloric acid will call forth an increased degree of intestinal putrefaction.

4. The conjugate sulphates form an index of the degree of intestinal putrefaction.

5. The increased intestinal putrefaction in cases of subacidity and anacidity of the gastric juice is largely referable to an increased formation of indol.

6. The elimination of indican in the urine may be regarded as an index of the amount of free hydrochloric acid present.

7. A normal acidity of the gastric juice is never associated with increased indicanuria.

8. Cases of ulcer of the stomach apparently form an exception to this rule, an increased indicanuria being usually associated with hyperchlorhydrie.

9. In other cases of hyperchlorhydrie a subnormal or normal amount of indican is eliminated.

10. Simple constipation is rarely accompained by an increased elimination of indican.

11. Diarrhœa referable to a catarrhal condition of the colon, often following a previously existing coprostasis, as well as diseases of the colon in general, is not associated with an increased indicanuria.

12. In the differential diagnosis between ileus and coprostasis, a small amount of indican excludes the former condition.

13. In cases of anachlorhydrie with much lactic acid the indican is not necessarily increased.

14. No indican, or but little indican with a delayed Günzburg potassium-iodide reaction, indicates the absence of free HCl, with much lactic acid.

15. Much indican with a normal or anticipating Günzburg reaction is suggestive of ulcer.

16. In cases in which the use of the gastric tube is impractical or contraindicated, or in cases of a mere superficial examination, the indican-reaction will furnish a valuable index of the condition of our patient's digestive powers.

17. By means of the indican-reaction we are enabled to follow closely the results of treatment instituted in cases of gastro-intestinal disease.

Given as premises:

1. That a resorption of decomposing pus is not taking place anywhere in the body, as such a process in itself is capable of producing an increased elimination of indican.

2. That there does not exist a stenosis of the small intestine.

3. A normal mixed diet containing no excessive amounts of red meat.

Unfortunately the methods which so far have been proposed for the purpose of quantitatively determining the amount of indican in the urine are not only inaccurate, excepting, perhaps, the spectroscopic method devised by Müller (*Mitth. aus der med. klinik. zu Wuerzburg*, 1886, vol. ii. p. 344), but what is more, too lengthy and complicated ever to be of value to the practising physician. (See Neubauer and Vogel's *Urinary Analysis.*) It is not to be wondered at, then, that the observations made by almost all observers, referred to in the above pages, are based upon an approximative estimation only; for practical purposes fortunately such a method, particularly the one to be presently described, is perfectly sufficient, the degree of increase, which interests us, of course, more particularly, being judged fairly accurately thereby, as is quite generally admitted by the men who have employed this method, and have compared the same with the results obtained by means of the more complicated ones referred to above.

The plan which I personally pursue is the following:

The urine of twenty-four hours is carefully collected, and a specimen therefrom taken for examination. A few c.cm. of urine are mixed with an equal amount of concentrated hydrochloric acid, two or three drops of a saturated solution of sodium hypochlorite or calcium hypochlorite, or, for that matter, of common saltpeter, and one or two c.cm. of chloroform added, the mixture being thoroughly agitated and set aside. The indigo which has been set free in this manner is taken up by the chloroform, coloring this blue to a greater or less extent, the degree of increase as compared with the norm being determined by the intensity of the color. If albumin be present, this should first be removed. Bile-pigment, which interferes with the reaction, is removed by means of a solution of subacetate of lead which should be carefully added, so as to avoid an excess; urines presenting a very dark color may be cleared up in the same manner. Potassium iodide, which, if present, will, owing to the liberation of free iodine, color the chloroform more or less of a carmine color, must also be removed.

For the sake of comparison it is well to employ the same quantities of urine and reagents in every case, marked tubes being very convenient for this purpose.

In this connection I may say that I have found this method at the same time to be a fairly sensitive test for albumin, the mixture of muriatic acid and urine upon the addition of the oxidizing agent presenting a well-marked cloudiness on the surface of the liquid, gradually extending downward.

I shall here append a table of the cases in which I have tested the urine for indican, in addition to those described above, which were essentially and provenly gastro-intestinal in origin; to these I shall add a table of those which I have found laid down in the literature:

TABLE 1.

Diagnosis.	No. of cases.	Indican increased.	Indican diminished.	Indican normal.	Observer.
Typhoid fever	80	80	0	0	Simon.
Cancer of cæcum and stomach	2	2	0	0	"
Pseudoleukæmia . . .	1	0	0	1	"
Epilepsy	25	13	0	12	"
Syphilis cerebri	2	0	0	2	"
Chronic interstitial nephritis .	5	5	0	0	"
Chlorosis	2	0	0	2	"
Albuminuria Da Costæ .	7	0	7	0	"
Pneumonia	2	0	1	1	"
Cretinism	1	0	0	1	"
Cystitis	1	0	0	1	"
Dysentery	2	0	0	2	"
Melancholia	1	0	1	0	fasting for 3 wks.
Migraine	3	0	0	3	Simon.
Chronic rheumatism .	2	1	0	1	"
Appendicitis	2	2	0	0	"
Ileus	1	1	0	0	"
Nervous diarrhœa . .	1	0	0	1	"
Chorea	1	0	0	1	"
Pleurisy	1	0	0	1	"
Cholelithiasis	1	1	0	0	"
Following laparotomies .	7	7	0	0	"

TABLE 2.

Diagnosis.	No. of cases.	Indican increased.	Indican diminished.	Indican normal.
Acute miliary tuberculosis . .	2	0	0	2
Typhoid fever	26	26	0	0
Diphtheria	9	0	0	9
Acute articular rheumatism . .	8	0	0	8
Intermittens	8	1	0	7
Meningitis	1	0	0	1
Scarlatina	6	0	0	6
Morbilli	5	0	0	5
Erysipelas	5	0	0	5
Pneumonia	8	0	0	8
Cholera Asiatica	...	Increase in every case.		
Cholera nostras	4	4	0	0
Constipation	8	2	1	5
Intestinal tuberculosis . . .	10	10	0	0
Catarrh of small intestine . .	12	12	0	0
Catarrh of large intestine . .	4	0	1	3
Carcinoma recti	1	0	0	1

Diagnosis.	No. of cases.	Indican increased.	Indican diminished.	Indican normal.
Carcinoma hepatis	5	5	0	0
Carcinoma pancreatis	1	1	0	0
Sarcoma intestinæ paræ	1	1	0	0
Appendicitis	4	4	0	0
Ileus	...	Large increase noted in all cases.		
Peritonitis tuberculosa	12	12	0	0
Peritonitis acuta	10	10	0	0
Cirrhosis hepatis	11	5	0	6
Icterus catarrhalis	12	12	0	0
Icterus et carcin. vent. et hep.	3	3	0	0
Amyloid kidney	...	No increase.		
Granular atrophy	11	4	0	7
Nephrit. acuta et chron.	...	No increase.		
Phthisis pulmonalis	15	0	0	15
Pleuritis serosa	6	0	0	6
Pleuritis purulenta	3	3	0	0
Pyopneumothorax	1	1	0	0
Bronchitis putrida	4	3	0	1
Bronchitis acuta et chr.	8	0	0	8
Bronchiectasis	3	0	0	3
Emphysema	3	0	0	3
Pericarditis	5	0	0	5
Hydropericardium	2	0	0	2
Myocarditis	1	0	0	1
Endocarditis	7	0	0	7
Valvular disease	25	0	0	25
Fatty degeneration	1	0	0	1
Atheroma	3	0	0	3
Aortic aneurism	2	0	0	2
Pernicious anæmia	1	0	0	1
Chlorosis	15	0	0	15
Leukæmia	1	0	0	1
Pseudoleukæmia	1	0	0	1
Addison's disease	5	1	0	4
Morbus maculosus	3	0	0	3
Scurvy	1	0	0	1
Scrofulosis	5	0	0	5
Rhachitis	6	0	0	6
Malignant lymphomata	1	0	0	1
Cerebral tumor	3	0	0	3
Hemiplegia	9	0	0	9
Bulbar paralysis	1	0	0	1
Spinal sclerosis	2	0	0	2
Multiple sclerosis	2	0	0	2
Amyotroph. lateral sclerosis	1	1	0	0
Mening. apoplexy	1	0	0	1
Tabes	3	0	0	3
Sciatica	2	0	0	2
Chorea minor	3	0	0	3
Chorea major	2	0	0	2
Tetanus	2	0	0	2
Epilepsy	3	0	0	3
Hysteria	5	0	0	5

Diagnosis.	No. of cases.	Indican increased.	Indican diminished.	Indican normal.
Facial paralysis	2	0	0	2
Lead colic	2	2	0	0
Chron. arsen. poison	1	0	0	1
Ovarian tumors	3	0	0	3
Carcinoma uteri	3	3	0	0
Chronic ulcerations	5	5	0	0
Trichinosis	3	3	0	0
Hæmoglobin. paroxys.	1	1	0	0
Glanders with intestinal ulcers	1	1	0	0

OBSERVATIONS ON THE DIAGNOSIS OF DIPHTHERIA.

A STUDY OF ITS LOCAL TREATMENT AND A FEW CASES TREATED WITH ANTITOXIN.

By Francis H. Williams, M.D.,
of Boston, Mass.

(Concluded from page 47.)

We now come to the clinical side of the local treatment of diphtheria, and the treatment to which I wish to direct your attention is that with strong hydrogen dioxide acid solutions.[1] The mortality in this State from diphtheria is greatest during October, November, December, and January, and my last service at the Boston City Hospital included the three latter months, November and December, 1893, and January, 1894, but I have permission to consider here the cases that were admitted in October, 1893, also.

On the mild, as well as on the hopeless cases, a 10-volume solution of hydrogen dioxide was generally used, alone or in connection with a solution of corrosive sublimate (1–5000 or 1–2500) or a solution of chlorinated soda. On *all* of the severer cases which came in the early days of the disease, and during my service, I endeavored to use a 50-volume hydrogen dioxide acid solution at short intervals.

To illustrate the advantages of using the 50-volume solution, let me take four patients who entered the hospital about the same time:

Two cases of diphtheria treated with a 10-volume solution of hydrogen dioxide.

P. H., aged twenty-one years, entered the hospital December 1st. Klebs-Loeffler bacilli found in the cultures. Thick false membrane on both tonsils and on the sides of the pharynx. Under treatment of 10-volume hydrogen dioxide solution every four hours the membrane had disappeared on December 20th, but there were still bacilli of diphtheria present on December 20th and 23d. The membrane returned again on January 1st. On January 3d no bacilli were found.

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[1] I have found these strong solutions useful in minor surgery; they should not be used in closed cavities, as too much oxygen might be set free and cause pressure.

As a dressing for sores and ulcers, one may use a 10-volume solution of hydrogen dioxide containing 0.1—0.2 per cent. of hydrochloric acid; when desirable pepsin may be added to this solution. The dioxide does not interfere with the action of the pepsin.

H. N., aged six years, entered the hospital on December 2d. Klebs-Loeffler bacilli found in the cultures. Small specks of false membrane on right tonsil and right palate. Ten-volume solution every three hours. Bacilli still present on December 25th; absent January 5th.

Two cases of diphtheria: the first one treated in part and the other wholly with a 50-volume solution of hydrogen dioxide.

S. M., aged ten years, entered the hospital on December 3d. Bacilli of diphtheria found in the cultures. This case seemed more severe than either of those above mentioned. False membrane on both tonsils, left palate, right anterior pillar, right and left wall of pharynx. At first a 10-volume solution was used, but as the membrane increased a 50-volume solution was substituted. Bacilli of diphtheria present December 10th; absent December 16th.

J. W., aged six years, entered the hospital December 8th. Bacilli of diphtheria found in cultures. A more severe case than any of the above. Thick false membranes on both tonsils and on both anterior pillars. The next day it covered the right, left, and posterior pharyngeal wall. The use of 50-volume hydrogen dioxide acid solution was then begun. Bacilli of diphtheria were present on December 11th, throat clear on December 16th, bacilli absent December 17th.

Of these four cases, the last two to enter the hospital presented more severe local symptoms than the first two, the last one, especially. The patients who entered the hospital December 1st and 2d, respectively, had a 10-volume hydrogen dioxide solution applied, and the bacilli were absent January 3d and 5th, respectively. Average duration of bacilli, thirty-four days. The patients who entered the hospital December 3d and 8th, respectively, had a 50-volume hydrogen dioxide acid solution, and the bacilli were absent December 16th and 17th, respectively. Average duration of bacilli, eleven days.

The three following cases further illustrate this point. The patients were adults of about the same age:

CASE I.—Membrane on tonsils and posterior pharynx. Cultures were made from the throat about every four days and bacilli of diphtheria found. On the fifty-third[1] day of the disease bacilli of diphtheria still found in the cultures; on the fifty-sixth day none was found. The treatment in this case was 10-volume hydrogen dioxide solution every hour, corrosive sublimate 1 : 2500 on a swab every two hours. Finally some of the strong hydrogen dioxide solution was used; after this had been applied for about three days the bacilli disappeared.

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[1] The duration of the bacilli in this case is above the average duration of the bacilli in the twenty-three cases alluded to later, in which the treatment was a 10-volume solution of hydrogen dioxide alone, or in connection with corrosive sublimate or chlorinated soda—but in two other of these cases the bacilli were present in the cultures three weeks longer than in this case.

One case of diphtheria in which a *partial* use of the strong dioxide acid solutions was made:

CASE II. entered the hospital more than two weeks later than Case I. Membrane on both tonsils. Klebs-Loeffler bacilli found in the cultures. As there was no strong dioxide solution at hand a 10-volume dioxide solution was used every two hours, followed by 1 : 2000 corrosive sublimate with 1 per cent. citric acid on swab. During the treatment the membrane spread and covered, besides both tonsils, the soft palate on both sides, anterior and posterior pillars, and the left and posterior wall of the pharynx. As soon as the strong dioxide arrived the above treatment was stopped and a 50-volume hydrogen dioxide solution was applied every two hours by day and every three hours by night for three days; then the intervals between the treatments were increased. After the culture made for diagnosis, no subsequent culture, unfortunately, was made until the twenty-sixth day of the disease. No bacilli were then found or afterward. This patient was discharged from the hospital two weeks earlier than Case I., and entered, as above stated, more than two weeks later.

One case of diphtheria, in which a *complete* use of the strong hydrogen dioxide acid solutions was made:

CASE III.—This case entered the hospital a month after Case I. Klebs-Loeffler bacilli found in the cultures. The membrane was everywhere, on tonsils, palate, uvula, pharynx, both sides and back, and in nose—a case which justified the old-fashioned term of putrid sore-throat. A 50 volume hydrogen dioxide solution was applied in spray every three hours during the day and twice during the night for five days; a 25-volume solution was then substituted which was applied three times during the day. No bacilli were present in a culture made on the eighth day of the disease nor at any subsequent examination. The throat of Case III. was free from bacilli two weeks earlier than Case I., although the patient entered the hospital a month later than Case I.

An estimate of the advantage in using the 50-volume solution, in point of the duration of the bacilli, is shown better by comparing the average time during which the bacilli remained in the throats of the milder cases which were treated with a 10-volume solution of hydrogen dioxide alone, or in connection with a solution of chlorinated soda or corrosive sublimate, with the average time during which the bacilli remained in the throats of patients more severely ill, but who, on the other, hand were treated with 50-volume hydrogen dioxide solutions. Most of both sets of cases occurred during about the same months.

In the first class of cases, twenty-three in number, the bacilli were found on the average to be present in the cultures on the twenty-seventh day of the disease and absent on the thirty-sixth day of the disease. No cultures were made between the two periods from which these averages were made up. The average age of these cases was seventeen years. In the second set of cases (severer ones), namely, those treated with strong hydrogen dioxide acid solutions, twenty-six in number,[1] the bacilli were found on the average to be present in the cultures on the twelfth day of the disease and absent on the 18.8 day of the disease. No cultures were made between the two periods from which these averages were made up. The average age of these cases was 19.4 years.[2]

It is hardly necessary to point out that the strong dioxide would probably have driven the bacilli from the throats of the milder cases sooner than it did from the severer ones.

In two-thirds of the twenty-six cases treated with strong hydrogen dioxide acid solution the *bacilli* disappeared *before* the *membrane;* in the remaining third this point was not determined. The patients were not discharged from the hospital until both bacilli and membrane had disappeared.

The capacity of a hospital for the treatment of diphtheria would be increased by using the local treatment with strong hydrogen dioxide solutions rather than those ordinarily employed, as the patients would remain in the diphtheria ward a shorter time.

The *diminution* of the bacilli in the throat under different treatments may be studied in some cases by examining a cover-glass preparation under the microscope made from swabs taken directly from the throat. This was done in a few cases only. After a patient had had, for example, a 10-volume hydrogen dioxide solution for ten days, bacilli of diphtheria and other organisms were readily found. In cases treated with 50-volume hydrogen dioxide solution examined in the same way from two to seven days after beginning treatment, very few organisms of any kind were found; bacilli were, however, found in the cultures in these cases for a longer period than in the cover-slips; these examinations show the marked and rapid diminution in the number of bacilli under the treatment by a 50-volume hydrogen dioxide solution.

The following case is one of those which illustrate how the 50-volume hydrogen dioxide acid solution may kill the diphtheria bacilli in a wound.

A patient ill with diphtheria had a contused wound, which was incised and the pus let out. A swab was taken from the wound, and the culture made from it was an almost pure culture of diphtheria bacilli. The flaps of thick dead skin were trimmed off, leaving an open wound about an inch in diameter covered with pus. The wound was cleansed with a

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[1] These cases are twenty-six of the thirty cases formerly taken up; of the four remaining cases, two died and two had no bacterial test applied before discharge, therefore they could not be taken into consideration here.

[2] Since this was written I have used 0.5 per cent. salt-solution in eleven cases. In these the bacilli were found to be present on an average on the 26.3 day of the disease, and absent on an average on the 35.4 day of the disease. No cultures were made between the two periods from which these averages were made up. One of these eleven cases had what may be described as a raw-beef throat, a condition which lasted nearly as long as the bacilli remained in the throat, which was six weeks.

50-volume hydrogen dioxide acid solution on a mop and covered with gauze moistened with a 10-volume solution. Four hours later the gauze was removed, and a second swab taken; no diphtheria bacilli were found, only staphylococci. That the diphtheria bacilli were killed by the 50-volume hydrogen dioxide solution and the staphylococci were not, is in accord with the laboratory tests.

Since this paper was read I have used by the kindness of Dr. H. W. Cushing in certain patients in his service (surgical) the strong solutions of hydrogen dioxide, usually 25, sometimes 50 volumes, freely upon large granulating surfaces of burns and ulcers. When they were so situated that the strong dioxide solution could be poured into a cup-like depression of the granulating surface this was done, and the dioxide allowed to remain some minutes; it was then washed out and more strong dioxide solution poured in; this was repeated several times. The strong solutions should not touch the skin. The granulating surfaces were cleansed in this way daily for weeks without causing the patients any discomfort, and they were dressed with a dilute solution of hydrochloric acid ($\frac{1}{10}$ or $\frac{1}{5}$ per cent.). All healed well.

Let us now consider the method of applying the strong hydrogen dioxide solutions.[1]

The Strength of the Applications. This depends upon what one wishes to accomplish, and should vary with the conditions which present themselves in the individual case; ordinarily from twenty-five to fifty volumes, according to circumstances, containing about $\frac{1}{10}$ to $\frac{1}{5}$ per cent. of acid, should be used. If there is much membrane, and especially if the case is septic and in the early days of the disease, the full 50-volume strength is needed. One should not omit to treat the nose and keep it clear, but a separate atomizer should be used for this purpose; in spraying the nose only very weak solutions, one or two to five volumes, should be used. The spray should be directed horizontally into the nostril and not upward. In the posterior nares the strong solutions may be employed by means of an up-spray; the formation of much foam after the application of the solution to the latter parts indicates the presence of membrane. The nose should not be blown strongly directly after spraying. It is very important to know the acidity and strength of the solutions of hydrogen dioxide, and the value of the treatment cannot be properly estimated unless analyses of the solutions are made. The different makes vary in the amount of acid and hydrogen dioxide they contain.

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[1] How not to use the solutions of hydrogen dioxide in diphtheria is very well illustrated, I think, by some cases that were brought to my attention since this paper was read. A solution of hydrogen dioxide in ether, known as pyrozone, was used to make the hydrogen dioxide solution. The manufacturers claim that these solutions are nearly neutral; in other words, an important germicidal element, the acid, is left out, the special property of the hydrogen dioxide itself being the disintegrating power. Second, the air-pressure used in the atomizers was too great. The air was pumped up to a pressure of eighty pounds, then allowed to run down to thirty pounds, and again pumped up to eighty pounds. The air-pressure should not be more than six or eight pounds.

The most efficient mode of application is by means of a gentle spray under an air-pressure of six to eight pounds—just sufficient to carry the solution to the desired spot; this avoids dilution better than when the applications are made on a mop, although sometimes a mop answers as well, and it is easier for the patient.

The discomfort of all local applications is usually greatest during the early days of the disease, when the throat is most sensitive and most congested, but at this time treatment is most serviceable. Later in the disease when the false membrane is clearing off, and if a sensitive, raw, congested surface is exposed, especial care should be taken to avoid these sensitive areas or to use the dioxide solution on a mop. One should be careful not to cause bleeding. The applications, especially in spray, should be made most gently. If the mop is used, the solution causes much less, sometimes no discomfort. The amount of discomfort is, in some instances, an indication of the want of skill in making the applications. While the smart of the strong dioxide is usually greater at the time than that of some of the other applications which are made to the throat, it is only momentary; patients invariably prefer the strong hydrogen dioxide solutions to chlorinated soda solutions of efficient strength. I recall some patients who spoke of the pain the strong dioxide solution caused, and I therefore tried, without their knowledge, spraying their throats with water, and often they did not distinguish between the two. It is the friction of the spray which I think largely causes the discomfort, and some throats are more sensitive than others and some patients more nervous. The majority of patients do not mind the strong dioxide solutions; many ask to have them applied oftener, on account of the relief which follows their use. In an adult, where the nose was closed with false membrane and the tonsils so much swollen and covered with false membrane as to cause cyanosis, the throat was cleared in a few moments by the use of the strong hydrogen dioxide solutions, and the breathing was thus made perfectly easy, although a few moments before tracheotomy had been considered.[1]

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[1] That the 50-volume hydrogen dioxide solutions are harmless when properly, even if very frequently applied, is illustrated by the following case, although before outlining it I should say that I do not consider it justifiable to use any local treatment hourly through the night.

B. R., a girl fifteen years old, nursery maid in a family where two children had just died of diphtheria, was sent to the hospital, probably about the first day of the disease, the family being on the alert for any symptoms of diphtheria. Clinically, the appearances in her throat were those of diphtheria, the false membrane covering nearly the whole surface of both tonsils. Unfortunately, no culture was made from the throat when the patient entered the hospital, and the swab taken next morning, after the strong dioxide solution had been applied a number of times, gave no bacilli of diphtheria, only staphylococci and streptococci; and that taken four days later, only staphylococci. There was a trace of albumin in the urine A new house officer began his service on the afternoon of this patient's arrival, and, through a misunder-

The Number of Applications.—The strong hydrogen dioxide solutions should be applied often during the first few days; by often I mean once every two hours by day, and twice during the night for the first night or two in severe cases. It will be found, after a few days, in some cases after two or three, that the diphtheria bacilli are much diminished in number or have even disappeared from the throat, although much false membrane may remain. Their disappearance can only be determined by cultures; false membrane in the throat is not a proof of the presence of the bacilli of diphtheria; it may be due to other organisms. No matter how much membrane there may be in the throat, we may be much relieved when the bacilli have disappeared from the cultures. When this has taken place local treatment should be omitted, except to give comfort to the patient by clearing the throat.

I am inclined to think that the persistence of the Klebs-Loeffler bacilli for more than a week or ten days, under the strong hydrogen dioxide treatment, is due usually to their being concealed in the folds of mucous membrane or in pockets which have been made by the inflammatory process, especially in the tonsils, and that the attention should be directed to the application of the solution to these hiding-places carefully and thoroughly.

I observed that in some cases of diphtheria the false membrane persisted under the use of the 50-volume hydrogen dioxide acid solution for some time after the Klebs-Loeffler bacilli had ceased to be present in the cultures; staphylococci were however present. This led me to study the action of the 50-volume solution upon the staphylococcus and to find that it would not kill this organism readily in the beaker. It will be seen in Table V. that a 100-volume hydrogen dioxide (1 per cent.) acid solution is required to kill the staphylococcus in five seconds. Further I found that chlorinated soda would kill it in the beaker quickly (ten seconds) and that clinically the false membrane that had persisted under the use of a 50-volume solution yielded (I have used this in a few cases only) under the alternate use of the 50-volume solution and a solution of chlorinated soda containing from 1–1000 to 1–500 available chlorine.

The local treatment of membranous throats may, therefore, be best carried on with the microscope and culture-tube in one hand and the remedies in the other. As soon as the bacilli of diphtheria have disappeared the strong dioxide should be omitted, except as a cleansing, deodor-

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standing, the 50-volume dioxide solution was applied every hour through the night, and until my visit in the morning (making about eighteen successive hourly applications), when I reduced the frequency of the applications to once in three hours by day, and directed that she should be waked once at night for an application. The patient did not make the slightest objection to the frequent treatment, and, so far as I could see, only good had resulted from it. The congestion was lessened and the false membrane covered very much less than its original area, and by afternoon—twenty-four hours after entrance—was nearly gone; traces of it were then seen for the last time. This was more rapid in its disappearance than in any other case I have seen.

izing,[1] or disintegrating agent. If we find that the organisms present are chiefly staphylococci, we may substitute chlorinated soda for the strong dioxide, or use them alternately—they should never be mixed nor used too near together, or we may use hydrogen dioxide and carbolic acid mixed together. The 50-volume dioxide does not kill the staphylococcus readily in the beaker; it will not therefore in the throat.

It follows from what has been just said that in treating pseudo-diphtheria where staphylococci are present we may use hydrogen dioxide solution as a disintegrating agent and chlorinated soda and carbolic acid as germicides.

The streptococcus pyogenes is quickly killed in the laboratory by very dilute hydrochloric acid; in the throat this should be combined with hydrogen dioxide.

In passing let me add a word of caution as to the use of alkalies in diphtheria. Many practitioners prescribe lime-water in diphtheria, and many are in the habit of prescribing some simple local application containing bicarbonate of soda, such as Dobell's solution, in a case of sore-throat. Such alkalies seem to me disadvantageous in diphtheria, as they favor the growth of the bacilli and the formation of their poison, and we should, therefore, be careful to avoid them in this disease or where there is a suspicion of the disease. It seems better to have the diseased parts bathed in acid—not alkaline—solutions.

The instruments which I have designed and found efficient for applying the hydrogen dioxide solutions are, first, three glass atomizers, which can be readily sterilized by boiling. One of these has a down-spray, the second a return-spray, and the third an up-spray. The latter (see Fig. 1) may be used to direct the spray to the side and upper portion of the pharnyx or to either tonsil without taking it out of the mouth, simply by turning it in the hand. A spray is best applied to the surface of the tonsils if directed at right-angles to it. This can easily be done with this atomizer, which I find indispensable. The rubber bulbs of these atomizers have two valves. I also use an atomizer with a straight spray. The atomizer for spraying the posterior nares from behind forward (return-spray) is made by bending the atomizer shown in Fig. 1 through ninety degrees one-half an inch from its tip.

The mop which I use for swabbing the throat consists of a small glass rod on which some absorbent cotton has been twisted. The rod is about eight inches long and one-eighth of an inch in diameter, and is bent at an angle of about forty-five degrees half an inch from the end, in order that the sides of the pharnyx may be more easily reached.

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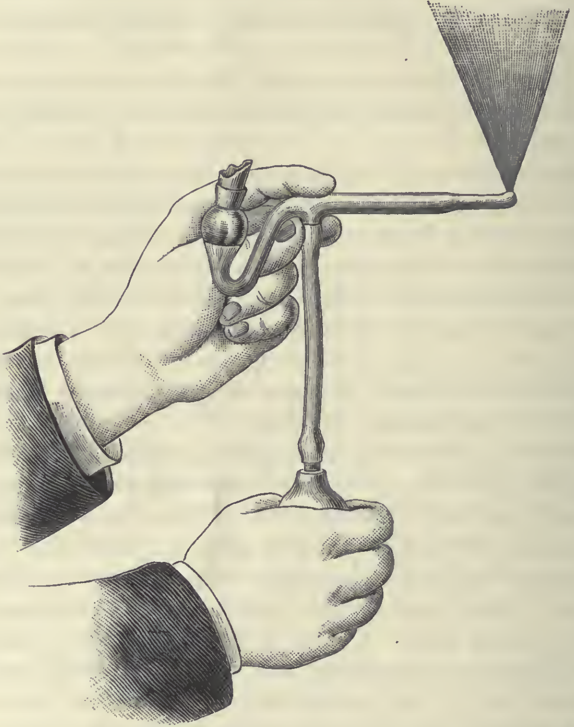
[1] A 5 per cent. solution of permanganate of potassium is frequently used as a deodorizer; a saturated solution contains about 6 per cent. of this substance; this would correspond as a source of oxygen to about a 6-volume solution of hydrogen dioxide.

The end of the rod is rounded and thickened a little by heating in a flame, as by this device the cotton is held more firmly.

To make the applications with success we should not only have good instruments but also the co-operation of the patient; it is a mistake to use force—I do not mean that young children should not be held in a position to let a good light fall into the throat, but the mouth should not be forced or pried open. One can nearly always gain the co-operation of children who are four or more years old (and I have used this treatment on children two years old who took it satisfactorily). If one begins tactfully, it is surprising to see how soon young children accept the habit of having the throat treated. It is not necessary to have the head lifted from the pillow. In order to accustom the patient to open the mouth properly I sometimes go through the manipulations of treatment once or twice with water instead of the remedy. It is very important to have the part which is to be treated well lighted, so that one may see exactly

FIG. 1.



From the thumb to the point the tube is five inches long. The up-spray is shown in this figure. The top-shaped bulb should not be filled more than one-half full. The mouth of the bulb may be loosely closed with a small roll of gauze (not absorbent cotton) to prevent spattering. (Made by McElroy, East Cambridge, Mass., U. S. A.)

what is *required* and also what is *done*. If the physician does not apply the treatment himself, he should see it done whenever he can. At night a very small kerosene lamp with a reflector, which also shades the eyes of the physician, a necessary condition to success, is good. I sometimes use a small electric light with a portable battery. It is not easy to apply local treatment properly in the throat, and the best results can only be obtained when great care is taken.[1]

In looking over what I have written it seems to me necessary to add some details essential to success in carrying out the treatment with strong hydrogen dioxide acid solutions, as there seems to be so much misconception about them as well as about the ordinary 10-volume solutions. Neutral solutions do not keep well and alkaline ones decompose readily. The hydrogen dioxide solutions which are sold in the market all contain some acid which increases their germicidal value and assists in preserving them.

The strong solutions of hydrogen dioxide may be made by evaporating the 10-volume solution (*U. S. Pharmacopœia*, 1890) in a porcelain dish over a stove or Bunsen burner; in this way one may, if one desires it, obtain a liquid containing 90 odd per cent. of hydrogen dioxide. A 50-volume solution (about 16 per cent.) of hydrogen dioxide may be readily obtained by evaporating a good 10-volume solution to one-sixth of its weight; a 25-volume solution by evaporating a good 10-volume solution to one-third of its weight.[2]

In making the strong solutions it is not necessary to add any acid, as but little of that present in the solution is lost, and 10-volume solutions containing 0.03 per cent. of acid when evaporated to one-sixth of their weight contain about 0.18 per cent. of acid, and this is as much as is required for use in diphtheria.

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[1] In the various inflammatory conditions of the throat, especially, for example, in measles and scarlet fever, it seems to me that there would be less tendency for the inflammation to extend along the Eustachian tube to the ears if pains were taken from the beginning to keep the throat and nose as clean as possible by means of solutions of hydrogen dioxide of suitable strength.

[2] If there were no loss of hydrogen dioxide during the evaporation, this process would yield a 60-volume solution, but about 20 per cent. of the dioxide is lost; therefore, in making a 50-volume solution it is necessary to evaporate a 10-volume to one-sixth instead of one-fifth of its weight. In making solutions of greater strength, the loss would be rather more; in making those of weaker strength, say 25 volumes, the loss would be less than 20 per cent. There is no economy in buying a solution that has not been well made, as it does not keep well and loses more on evaporation than a good one. The time required to evaporate 190 grammes of a 10-volume solution (*U. S. P.*, 1890) to 32 grammes (an ounce) of 50-volume solution is half an hour. One may carry on the evaporation at a gentle boil at the rate of about 6 grammes (one drachm and one-half) per minute.

For commercial purposes the strong solution can doubtless be made with a smaller amount of loss. I simply suggest how, in the emergency of diphtheria, one may quickly obtain a strong solution. Usually I make some ounces at one time.

In the solution of the Oakland Chemical Company the free acid seems to be chiefly hydrochloric, and this is the acid which I now prefer; it is a better germicide than sulphuric acid, although not so good as nitric. Hydrogen dioxide solutions keep better in cool than in warm places; they decompose more rapidly in sunlight.

I have lately made twenty-six experiments, extending over periods of from four to twenty-six weeks, upon the keeping-qualities of hydrogen dioxide solutions of strengths varying from 10 to over 100 volumes, and these tests show that the strong hydrogen dioxide solutions of 25 and 50 volumes of good make are sufficiently stable to be perfectly practicable.

Let me remind you in passing that the gastric juice contains 0.2 per cent. of hydrochloric acid; as this amount does not injure the lining membrane of the stomach it could hardly injure the throat when applied for a short period only.

Hydrogen dioxide is a bleaching-agent, and should not be brought into contact with the hair or colored fabrics. One should avoid getting the strong solution on the skin, as it may after a few minutes whiten it and cause a pricking sensation. It is probable that it attacks the dead outer layer of the epidermis, and hence the white appearance. A minute portion of the solution may get into some small cavities of the skin, and the oxygen gas be there liberated, thus causing pressure on the endings of the sensitive nerves.

Bromide of potassium is of much service to adults during the first few nights, as they are very anxious when they find they have so severe a disease as diphtheria; children do not need it, as they go to sleep directly after treatment, or if asleep are frequently not fully awakened by the treatment.

In many cases of retraction much relief follows the inhalation of steam or calomel fumigations.

There should be abundant and dry air in the patient's room and abundant and direct sunlight. Sunlight is especially advantageous in a diphtheria-ward on account of its excellent germicidal properties, and every room in a hospital for such patients should have this. The simplest construction will permit these conditions to be fulfilled. The building should run north and south, so that every bed may have sunshine part of the day. Overcrowding is extremely harmful.

The utmost attention should be paid to the nourishment of the patient; if too little food is taken by the mouth, it should be supplemented by feeding in other ways, as by the rectum or by means of a soft catheter and a funnel. The catheter may be inserted gently through the nose into the œsophagus and liquid food may be poured into the funnel.

Good food, absolute rest, protection from draught or from a temperature that might give the patient a cold, are to be insisted upon. In some cases stimulation is necessary. Strychnine, digitalis, and iron should be used when required.

The mortality from diphtheria differs in different cities (in recent years it has been very much higher in Boston than in some other cities) and in different institutions, and may differ in the same institution during the same period of time; these variations, I believe, *usually* depend not so much upon the special medical treatment employed as upon the state in which patients are admitted and the conditions which surround them after admission; by this I mean the ventilation of the ward, the amount of sunlight, the care taken in regard to the cleanliness of the instruments, exposure to other diseases, etc. The milder cases recover if no harmful treatment is employed.

At the Boston City Hospital there are two buildings for the scarlet fever patients, one belonging to the hospital, which is used for acute cases of scarlet fever, and the other, a wooden building, placed at the disposal of the hospital less than a year ago, which is used for the convalescent cases of scarlet fever. Diphtheria has developed in both buildings, but in the first the cases have usually been mild in character; in the second, the building for convalescents, they have been severe, among the most severe and fatal we have had at the hospital. The two buildings are erected on land that is only a few feet above high-water mark, but in the building that does not belong to the hospital the damp ground is not covered with cement, as is the case in the other building.

I have used the strong hydrogen dioxide acid solutions in over one hundred cases, which varied in age from two to sixty-eight years; some were cases of pseudo-diphtheria, and others were hopeless cases of diphtheria, in which it was used to give comfort to the patient by getting out membrane from the throat, so that swallowing was made easier, or to keep down the septic odor; again, others were cases that came under treatment early in the disease.

The 50-volume solutions fulfil the conditions sought; they will kill the bacilli of diphtheria in the laboratory in five seconds, and are not poisonous; they are readily decomposed into oxygen and water; they prevent the septic odor and take off certain portions of the false membrane better than anything else I have employed; under their use the congestion and glandular tenderness and enlargement are more quickly diminished, and the bacilli remain for a shorter time in the throat. Not only is the course of the disease shortened, but also the convalescence is conspicuously rapid compared with the cases under my care before I used this treatment. The patient is thus for a shorter time a menace to those around him, and the danger of the spread of the disease is much lessened. There is conspicuously less tendency to cardiac weakness.

In studying the effect of any local treatment upon the mortality, it seems to me that we should consider chiefly the cases in which the treatment has not been delayed too long—say, not beyond three days.

I will, therefore, discuss here two series of cases of membranous throats, occurring in different years, that were treated with strong hydrogen dioxide solutions, and comply with this condition. There were eighteen in the first series and thirty in the second series—forty-eight in all. During the first period there were, in all, twenty-three cases of membranous throats, the diagnosis of which was not based on cultures that entered the hospital within the first three days of the disease, so far as known. Five of these do not concern us, as they were not treated with strong solutions of hydrogen dioxide, but, being operative cases, were transferred directly from the medical to the surgical side of the hospital, were there intubed, and died two days after entrance. The remaining eighteen make up the first series of cases treated with strong hydrogen dioxide acid solutions within the first three days of the disease. One of these eighteen cases died; this was a laryngeal case at entrance.

During the second period there were, in all, forty cases of diphtheria, the diagnosis of which was based on cultures, that came under my care within the first three days of the disease. Ten of these cases do not concern us, for the following reasons: Seven were mild or very mild cases that recovered and were not treated with strong hydrogen dioxide acid solutions. The eighth was a child who entered the hospital on the *second* day of the disease, but on account of extreme homesickness did not have any treatment until the *fourth* day of the disease. She was then treated with the strong hydrogen dioxide acid solutions, and recovered. The ninth and tenth cases were not treated with the strong hydrogen dioxide solutions until after three days, as there was none in the ward for a time, or it was deficient in strength. These two cases died. The remaining thirty cases of diphtheria, making up the second series of cases under discussion, were treated with strong hydrogen dioxide acid solutions within the first three days of the disease, so far as known. Four-fifths of these thirty cases entered the hospital during the months in which the mortality from diphtheria in Massachusetts is greatest. Of these thirty cases two died. One was a woman, twenty-four years of age, who was vaccinated a few days before the attack of diphtheria began, and the solution used in this case was found to have been far below 50 volumes in strength. (In private practice I always test the solutions before using them.) The patient, some years before, had lost a brother and sister with diphtheria. The other was a child, four years of age, who took the treatment well for one day, but became delirious the next day, so that further treatment was impracticable, and died the following day.

It gives me pleasure to testify here to the careful manner in which the house officers and nurses carried out my instructions in regard to these patients.

I have used the strong hydrogen dioxide acid solutions at the Boston City Hospitals during the years 1892, '93, and January, 1894, six months in all, as well as in private practice, and have used them with increasing satisfaction.

In closing this paper, I wish to emphasize the importance of the early diagnosis of diphtheria, and, if the treatment be local, of prompt, gentle, and thorough treatment during the early days of the disease with strong hydrogen dioxide solutions of known strength, containing a proper amount of acid, applied with efficient instruments.

Eighteen Cases of Diphtheria Treated with Antitoxin.

Since this paper was read I have used antitoxin (Behring's and Aronson's) in eighteen cases of diphtheria. Four of these cases were mild, and recovered; seven were neither mild nor severe, and recovered; in these cases the antitoxin was given in the early stages of the disease; four were severe; three of these recovered and one died; in this case the antitoxin was given about the fifth day of the disease; three were hopeless cases when the antitoxin was given; these died. Excluding the four cases that died and the four mild cases there remain ten cases; four of these had paralysis, four some form of eruption like measles or urticaria, three suffered from pain in the bones, and two with swelling of the joints. The two latter cases I will outline briefly:

A. B., aged twenty-five years. As this patient had a child ill with diphtheria, I gave her 1 c.cm. of Aronson's solution as a preventive, but this did not prevent. Six days later she complained of a sore-throat; on the following day there were much congestion and swelling of the tonsils and pharynx, and there was a patch of false membrane on the right tonsil and posterior wall of pharynx. Temperature 102°. A culture made from the throat showed the presence of diphtheria bacilli. I injected 10 c.cm. of Behring's solution No. 2. On the day thereafter the false membrane had spread to the left tonsil, but within three days the throat was nearly clear and the congestion almost gone. On the seventh day of the disease no bacilli were found in the culture. The patient did remarkably well until the twelfth day, when she complained of pain in the left shoulder, back, and left leg; on the thirteenth day the pain was in the left shoulder, right wrist, and occasionally in the back. Hemorrhagic spots one-quarter of an inch in diameter and surrounded by a swollen area half an inch wide appeared, two on the palmar surface of the right hand and one on the palmar surface over the first phalanx of the third finger of the left hand, and one on each heel. These were very tender to the touch. The temperature had been normal for several days, but on this day there was a rise of temperature to 102° both morning and evening. On the fourteenth day the pain disappeared except from the finger. On the fifteenth day intense pain came on suddenly in the left arm, and for several days thereafter the pain returned suddenly during the afternoon and evening. From one-half to one grain of morphine was needed to relieve it. The extremities of the ulnar were swollen and the parts were hot and tender. Salicylate of soda, ten grains hourly, gave no relief, although physiological symptoms were soon produced. Iodide of potassium seemed for a few days to give some relief; there were less tenderness and swelling. The arm and hand were covered with cotton, and were kept on a splint extending from the elbow to the finger-tips. About the twentieth day of the disease the wrist and hand were much swollen and very painful; hot poultices gave more relief than anything else that was used locally. The pain was, as a rule, not severe during the day, but during the afternoon or at night morphine was required for about three weeks. Five weeks after the attack of diphtheria began the patient was more comfortable, although there was still some pain.

T. H., aged five years. Seen once in consultation with Dr. C. D. Sawin, of Charlestown. Dr. Sawin had given the patient 25 c.cm. of the New York solution of antitoxin before I saw him. I injected 10 c.cm. of Behring's solution No. 2, and subsequently Dr. Sawin gave 20 c.cm. more of the New York solution; the total amount of antitoxin given being 55 c.cm. On the ninth day of the disease there was a well-marked rash, followed on the eleventh day by urticaria with intense itching and great restlessness. On the fifteenth and sixteenth days the rash reappeared with swelling of the phalangeal joints and left elbow; also the right great toe, with inability to move any of the parts without considerable pain and discomfort; on the nineteenth day the patient was able to move the hands readily, but there was some difficulty in moving the left leg, while the right leg was almost useless, rash gone.

The rapid loosening of the false membrane may be a source of danger, as the following cases illustrate:

T. M., aged five years, well developed and in excellent condition. Bacilli of diphtheria were found in culture. I injected 10 c.cm. of Behring's No. 2 solution subcutaneously into the thigh. All other treatment was omitted. In the afternoon thereafter the patient was rather sleepy. On the morning of the third day, that is, twenty-four hours after the injection of the antitoxin, the patient's general condition had improved; in the afternoon the area of false membrane was smaller, and it was loosening and coming off. I took away with the forceps a piece of false membrane, one-half by three-quarters of an inch, which was hanging by a thread in front of the uvula, as I feared that it might be drawn into the trachea and choke the child. Twelve ounces of milk and two eggs were taken on this day. The urine was small in amount, and passed only an ounce at a time. Two loose dejections in the afternoon. The general and local improvement during these twenty-four hours was marked, and more rapid than usual in patients in her condition. On the fourth day the patient ate and slept well. There was less false membrane; a little remained on the right anterior pillar, and there was a small spot about an eighth of an inch in diameter on the left tonsil. Less congestion and swelling. On the fifth day the throat was nearly clear of membrane; only a small area remained on the right tonsil. Patient in excellent condition. I did not see her again, as my service was at an end; but by Dr. Withington's permission I give a further record of the case. On the eighth day the throat was clear of false membrane, and she was doing well. On the ninth day a rash of scarlet fever appeared on her chest, and spread all over the body. She vomited several times. On the eleventh day the respirations were from 50 to 60 a minute; but careful examination of the lungs and heart did not reveal anything else abnormal. On the fourteenth day there were bacilli still in the throat. On the seventeenth day the bacilli were absent. She stopped desquamating on the thirty-eighth day of the scarlet fever. Internal strabismus of the left eye was noticed about the fiftieth day of her illness. This disappeared in about two weeks.

S. E., a well-developed child, aged four and one-half years, whom I saw in consultation with Dr. H. W. Broughton, of Jamaica Plain.

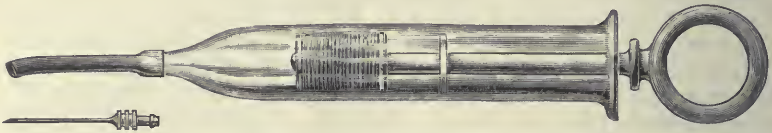
When I first saw her the temperature was 102°, pulse 120. The local symptoms were severe; there were much congestion and swelling; both tonsils, the uvula, both sides and the posterior wall of the pharynx were covered with a thick, false membrane, and there were complete aphonia and croupy breathing. I injected 15 c.cm. of Behring's solution of antitoxin, No. 3 (the strongest)—5 c.cm. in each of three places on the outside of the thigh. On the third day of the disease, twenty-four hours after the injection of the antitoxin, the false membrane had begun to loosen and looked moister. During the day the throat was sprayed twice with a 25-volume solution of hydrogen dioxide, which assisted in removing the false membrane from the pharynx. The improvement by the afternoon of this day was unquestionable; barring accidents the patient seemed likely to recover, although thirty-six hours before her recovery seemed doubtful. At 9.15 P.M. of this same day Dr. Broughton sent for me again, as the child had difficulty in breathing, and there was marked retraction. It seemed as if tracheotomy might become necessary directly. Dr. Broughton gave the child a teaspoonful of ipecac as an emetic, and three or four minutes later she got up a piece of false membrane one-quarter by one inch and a half long, and the breathing improved immediately. Abont half an hour later a small amount of mucus was vomited. Evidently the false membrane was separating in the larynx as it had done in the pharynx. It seemed to me now that tracheotomy might be avoided. This early loosening of the false membrane in the pharynx (as seen in T. M.), by which this membrane may get into the windpipe and choke the patient, and the rapid loosening of the false membrane in the trachea, is a danger about which one must be on one's guard in using antitoxin. Dr. Broughton remained at hand during the night, and every preparation was made for tracheotomy in case it should become necessary; but fortunately it did not. On the third day the temperature was normal, pulse 104, respiration 24. The patient took nourishment well, but spoke in a hoarse whisper. Pharynx almost clear of false membrane. On the tenth day she is reported as doing well, except that she has a whispering voice; up and dressed. Recovered.

The marked and rapid improvement, both local and general, and the very favorable statistics thus far of large numbers of cases of diphtheria that have been treated early in the disease, show that antitoxin is a remarkable remedy, and ways will probably be found to overcome some of the untoward effects that have followed its use. In many severe cases that come under treatment late in the disease, antitoxin does not seem to be of much service, but the reputation of this remedy will incline people to be treated earlier, and this will lower the mortality in this disease. In laryngeal diphtheria antitoxin is our chief reliance.

The syringe (see Fig. 2) which I have designed and use to inject antitoxin is a modification of the one I published in 1892; it is made of glass, and is packed with asbestos, and is joined to the hypodermatic needle by a short piece of rubber-tubing; by this device the antitoxin may be injected with greater ease into a struggling child, and the danger of breaking off the needle under the skin, an accident which may happen when the needle is rigidly fixed to the syringe, is avoided. This instrument may be sterilized by boiling in water.

In Europe local treatment is recommended to be used with antitoxin. In some of my patients I have used antitoxin alone, and in others I have combined with it local treatment with a 25-volume acid solution of hydrogen dioxide in the throat; and in nasal diphtheria I have used in the nose a dilute (2-volume) solution. These solutions may be used every three hours in spray. The loosening and softening action of the antitoxin, together with the disintegrating action of the hydrogen dioxide solution, removes the membrane rapidly, and the hydrogen dioxide solution lessens, if it does not obviate, the danger of pieces of false membrane getting into the trachea from the pharynx.

FIG. 2.



The cut is one-half the actual size. To use the syringe remove the needle, insert the rubber tube into the bottle of serum, and fill half to two-thirds full; put on the needle; next hold the syringe horizontally, and fill the needle with serum; insert the needle under the skin, and inject the serum, holding the handle up; the bubble of air near the piston allows all the serum in the syringe to be injected. When the syringe is made with a square instead of a pointed end this precaution is not required.

In treating diphtheria I now usually inject antitoxin and use a spray of hydrogen dioxide of appropriate strength locally in the throat, and a 2-volume solution in the nose once in three or four hours by day.

A CASE OF ACROMEGALY IN A GIANTESS.

BY WOODS HUTCHINSON, A.M., M.D.,
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ABOUT the middle of February, 1893, "Lady Aama," a French giantess, was brought to this city to be exhibited in a "museum." A week or so later she was taken ill, and on the 27th of the month her death was reported.

Negotiations were opened with the party under whose escort she was travelling, and her body was secured for the museum of the State University at Iowa City, and an opportunity was thereby afforded me for examining what proved to be a most interesting anomaly.

Owing, however, to the unavoidable pressure of other work at the time of the autopsy and previous to the use of the body in the dissecting-room, I was unable to work out many of the details at all as thoroughly as I should have liked or as the importance of the subject deserved, and my only excuse for presenting such an imperfect sketch as follows is the great interest and unusual nature of the case.

For the careful measurement of the skeleton and the photographs, I am indebted to the kindness of Dr. J. W. Harriman and Mr. Frank Carroll.

"Lady Aama" had been reported and advertised to be "over eight feet" in height, but this was, of course, recognized as merely the "regulation stature" of all giants thought worthy of an introduction to the public, and it was no surprise to find that her height, or, more properly, length, when carefully measured five days after death, was exactly 6 feet 7¾ inches, though possibly it might have exceeded this slightly during life when the arch of the instep would be better supported and the intervertebral disks unshrunken. The measurements were taken between two uprights standing perpendicular to the table on which the body lay and pressed against the vertex of the head and heel and ball of the foot respectively.

Her baptismal name was Emma Alline Batallaid, and her birthplace on the slopes of the Jura in France, her age being variously stated by her sisters at nineteen and seventeen years, the latter appearing most probable on later examination as scarcely a third of the epiphyses in her skeleton were united with their apophyses, although this may have been a part of the general imperfect development of all her tissues. The "oldest" epiphysis united was that of the lower end at the tibia—eighteenth year (Quain).

The cause of her death was given as "quick consumption" which had lasted for only six months or so, but on more careful inquiry it was found that she had been failing gradually in strength for some four or five years past, and had died quite suddenly. She was exhibited within three days of her death from what appeared to have been an attack of la grippe or of acute bronchitis; death occurring from syncope after a severe fit of coughing. She suffered very little pain during her illness, but the muscular weakness was so extreme that for weeks before her death she was obliged to support herself when standing by holding on to an upright rod fixed in the floor. In fact, her death appeared mainly due to a general state of collapse hastened by an acute coryza.

She was the fifteenth child of a poor laborer, all the others being of normal height (one sister accompanying her and shown in Fig. 1). The latter declared that she was still increasing in height up to the time of her death.

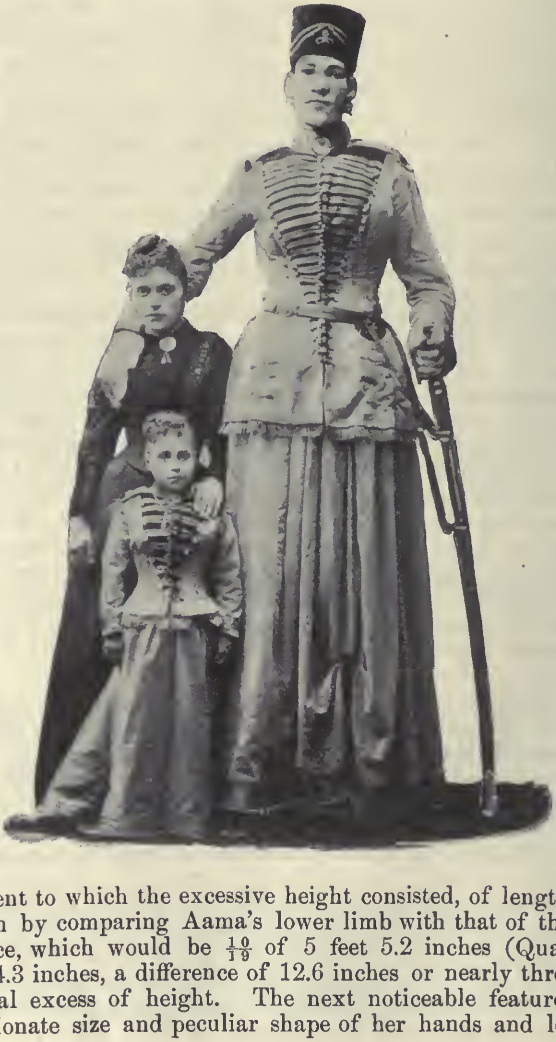
Her intelligence was decidedly poor, but in no way abnormal.

The body was extremely emaciated, and the first thing which arrested the attention was the apparently small size of the chest and trunk as a whole compared with the greatly elongated extremities; this, of course, was merely in accordance with what I believe is the rule in such cases, viz., that the increase in height in giants and the decrease in dwarfs is principally in the limbs, the body being comparatively near the normal standard in both cases.

This impression was found to be correct by the measurements which revealed that the length of the lower extremity from the top of the great trochanter to the lower border of the os calcis was 47 inches, or nearly 60 per cent. of the total height, while the mid-point of the latter usually lies about an inch below this level, upper border of symphysis. (Quain.) According to Blanc's canon (*Artistic Anatomy*, Duval) as followed by the ancient Egyptian artists, the length of the lower limb from this point should be $\frac{10}{19}$ of the entire height, which in Aama's case would be $41\frac{2}{3}$ inches or $5\frac{1}{8}$ inches less than the actual measurement. The same was found true at the upper extremity (acromion to tip of middle finger), which by the same canon should have been $\frac{8}{19}$ of the total stature, equal to $33\frac{1}{3}$ inches, but actually measured 37 inches.

The same relation is found to be carried out in the measurements of the bones of the chest, the sternum measuring $8\frac{1}{4}$ inches, or barely a quarter of an inch longer than that of the average adult male (Duval) and the clavicle 7 inches or only one inch above the same standard.

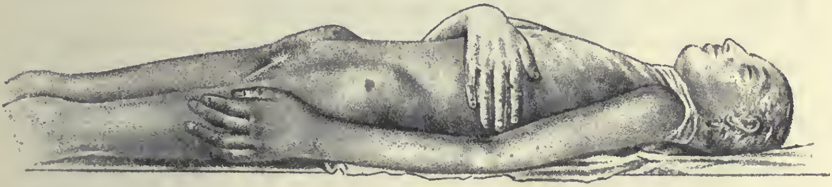
FIG. 1.



The extent to which the excessive height consisted, of length of limb, can be seen by comparing Aama's lower limb with that of the average of her race, which would be $\frac{10}{19}$ of 5 feet 5.2 inches (Quatrefages), equal to 34.3 inches, a difference of 12.6 inches or nearly three-fourths of the total excess of height. The next noticeable feature was the disproportionate size and peculiar shape of her hands and lower jaw, which are fairly shown in Figs. 1 and 2. Measurements were again found to confirm this impression; the hand, instead of being according to the artistic canon, $\frac{1}{10}$ of the total height, equal to 7.9 inches, was actually 11.25 inches in length, or nearly $\frac{1}{7}$ of the height, and of a peculiarly "spade-like" shape, with long, square-tipped fingers of uniform breadth throughout their length. The foot, instead of $\frac{3}{19}$ of the height, viz., 12.6 inches, measured 13.75 inches; while not only the jaw but also the nasal bones, as shown in Fig. 4, were decidedly enlarged. The lower jaw measured $6\frac{1}{4}$ inches from angle to symphysis as against the $3\frac{3}{4}$ inches which is the norm for male adults. The skull proper, on the other hand, was found to be barely above the average size, measuring $21\frac{1}{8}$ inches in circumference as compared with the norm (female) of 20 inches.

There was absolutely nothing in a view of the trunk above the pubes to indicate the sex, the mammary glands being almost completely absent and the circumference of the chest being only two inches less than that of the hips (39 in.).

FIG. 2.



The nipples were flat and small, and upon dissection a mere trace of gland tissue and of a suspensory ligament could be made out. The integument of the body was thickish and earthy-looking, but not otherwise abnormal, and the hair of the scalp was thin and sparse but of about normal length.

Autopsy. I was not able to be present at the autopsy, and it was performed by my prosector, unfortunately without special reference to the possibility of acromegaly.

Emaciation extreme. Heart slightly above normal size. Left ventricle enlarged and dilated valves, and pericardium normal.

Lungs. Normal, except in size, which appeared below the average. Light in color and completely collapsed. No pleural adhesions.

Spleen. Greatly enlarged—weight two pounds. Pulp grayish. Capsule thin and surface lobulated.

Kidneys. Normal; capsule non-adherent.

Liver. Slightly enlarged, but otherwise healthy.

Suprarenals enlarged.

Thyroid gland. Normal in size and appearance.

The brain was pale and sodden-looking, but (owing partly to the fact of its being impossible to make an autopsy until nearly a week after death) in such a degenerated condition that it was difficult to remove it entire.

This was especially marked at the tip of the left temporo-sphenoidal lobe, which was removed as a putty-like mass of débris. From the same cause the pituitary body, which was greatly enlarged, was torn across in removing, and its form and outline completely destroyed.

Its dimensions (reported as "about the size of the last joint of the thumb"), however, can be judged by those of the fossa—well shown in Fig. 3, which measured 1¼ inches in its antero-posterior and 1½ inches in its transverse diameters.

The weight of the brain (after hardening in alcohol to permit of its handling) was 36 ounces, or 8 ounces below the average (female).

The lateral ventricles appeared somewhat dilated, the tip of the anterior horn being enlarged and rounded and the cavity of the third extended well down into the infundibulum. There were no hemorrhagic patches and the membranes were healthy. The convolutions, fissures, and general proportions were normal, except for a peculiar thickening and compression backward of the temporo-sphenoidal lobes causing the anterior third of the fissure of Sylvius to run almost vertically and the uncinate gyrus to project internally.

The most striking abnormality was found in the generative organs. The mons veneris and labia majora were flat and poorly developed. The clitoris was nearly half an inch in diameter and extremely prominent, and with the large clitoridal folds, 1½ inches in length; presented no very fanciful resemblance to a small and imperfectly developed penis. This probably was the cause of the reports circulated during "Aama's" lifetime that she was an hermaphrodite.

The vagina was small and straight, barely capable of admitting the forefinger.

The uterus was 1¼ inches in length and ⅔ inch broad—about the size and shape of the last joint of the little finger, and weighed two drachms.

The Fallopian tubes were barely recognizable, and their abdominal extremities had only three or four rudimentary fimbriæ (none attached to the ovary). The ovaries were small granular-looking masses about the size of the finger-nail, adhering to the posterior surface of the broad ligament.

The Skeleton. After the removal of the softer tissues the bones were macerated and cleaned, with the hope of being able to mount them for the museum, but such was their spongy, crumbling condition that it seemed doubtful whether they were firm enough to hold the wires and support their own weight. The whole osseous system appeared to be in a condition of osteoporosis; a touch would dislodge the teeth from their sockets, the ribs and slighter bones would snap across at the lightest strain, and the epiphyseal plates upon the bodies of the vertebræ could be lifted off with the finger. In fact, it literally appeared as if there was no more actual osseous material in this gigantic skeleton than would be required to make a sound, firm, bony framework of the average size.

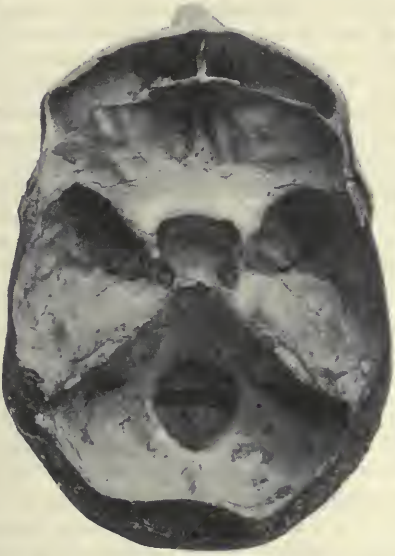
The bones, though much larger, were very little heavier than normal, the radius, scapula, and fibula, for instance, being found to exceed the average of healthy bones in weight only 10 per cent.

THE SKULL.

Circumference at level of glabella	21⅛	inches.
Distance between external orbital processes	5⅛	"
Superciliary ridge to point of symphysis	6¾	"
Angle of inferior maxilla to symphysis	6¼	"
Length of nasal bone	1¼	"
Breadth of nasal bone	¾	"
Glabella to occipital point	7¾	"
Breadth index	74	"
Height index	76	"

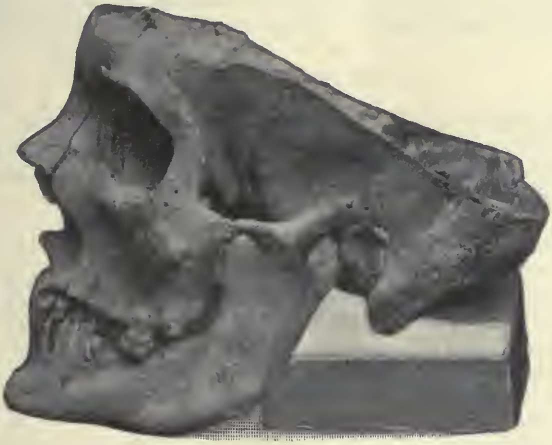
A most striking illustration of the highly rarefied, not to say cavernous, condition of the bones is seen in the condition of the frontal sinuses (Fig. 3), which are huge cavities two inches from side to side on the right side and two and three-eighths inches on the left, three-quarters inch from before backward, and one and one-half inches in depth, the bony tissues being expanded to a mere shell of the thickness of writing-

FIG. 3.



View of interior of cranium, showing pituitary fossa and frontal sinuses.

FIG. 4.



Lateral view of skull (nasal bones and upper end at lachrymal groove outlined in crayon).

paper. The same condition was found in the maxillary antrum, which was actually cribriform in the tuberosity, while the squamous plate of the temporal was so thin that the groove for the middle meningeal artery actually causes a perforation half an inch long on the right side. The zygoma is reduced at one point to the thickness of pasteboard.

Except the great size of the pituitary fossa, the only noticeable alteration of the cranial interior is a peculiar shortening and thickening (antero-posteriorly) of the petrous bars (which can be seen in the illustration), accompanied by an internal auditory meatus nearly double the normal size and placed well down upon their posterior surface. This has almost the appearance of having been caused by the pressure of an enlarged pituitary body during embryonic life, preventing their growth inward and forward and causing them to enlarge laterally. As if this had actually been the case, the carotid canals are considerably larger than normal (three-eighths of an inch in antero-posterior diameter), while the jugular foramina are overlapped by this bulging to such an extent that their diameter, as seen from the interior of the cranium, is reduced on the right side to less than two-thirds of what it is on the under surface of the skull, and on the left side to less than one-third. On the right side a spur of bone projects completely across the aperture, and on the left side it is an elongated, irregular slit.

The large size of the nasal bones—outlined in crayon—and the width of the upper end of the lachrymal groove are seen in Fig. 3. The lachrymal canal is proportionately dilated, measuring at the level of the floor of the orbit no less than three-eighths of an inch in transverse, and one-fourth of an inch in antero-posterior diameters; an ordinary female silver (No. 18 French) catheter can be readily passed down it into the nose.

The crumbling condition of both upper and lower alveolar processes and the looseness of the teeth can also be seen (Fig. 3), many of the fangs being exposed. Both the upper incisors, canine, bicuspids, and first molar on the left side have disappeared, and the alveolus is atrophied, while the remaining teeth are either loose in their sockets or have large cavities in their crowns. An upper plate was worn during life.

Pelvis and Trunk.

Pelvis—		
Circumference around crest	38	inches.
Transverse from antero-superior spine to same	15	"
Superior strait	6½	"
Inferior strait	6	"
Depth	7	"
Transverse diameter	6½	"
Antero-posterior diameter	7	"
Symphysis of pubis to tuberosity of ischium	6½	"
Crest of ilium to tuberosity of ischium	11	"
Antero-superior spine to postero-superior spine	8	"
Antero-superior spine to postero-inferior spine	9½	"
Crest of ilium to sacro-sciatic notch	7	"
Length of sacrum and coccyx (internal)	9½	"
" " " " " (external)	10½	"
Long diameter of sacro-sciatic foramen	2¾	"
Diameter of acetabulum	2¼ and 2½	"
Depth of acetabulum	1¾ and 1½	"
Depth of pubic symphysis	2¾	"

Lumbar vertebra (4th)—		
Tip to tip of transverse processes	5¾	inches.
Body	2¼ by 2¾	"
Trunk—		
Spine-atlas to end of coccyx, following curves	42	inches.
Sternum-length	8¼	"
Clavicle-length	7	"
Scapula (inferior angle to tip of acromion)	10¾	"

The sternum presented a central round perforation one-third of an inch in diameter in the third piece of the gladiolus, and the fourth piece was cleft and broadened at its extremity. The acromial epiphysis was in two pieces.

Upper extremity—		
Whole arm and hand	37	inches.
Humerus	15¼	"
Olecranon to tip of second finger	23	inches.
Ulna	11¾	"
Radius	11⅛	"
Middle metacarpal and finger	9⅝	"
Metacarpal (middle)	3⅞	"
First phalanx (middle)	2⅝	"
Lower extremity—		
Head of femur to os calcis	47½	inches.
Femur (head to internal condyle)	23¼	"
From depression for ligamentum teres to outer side of trochanter major	5¾	"
Width at condyles	5½	"
Greater to lesser trochanter	5½	"
" " internal condyle	22¾	"
Circumference of neck	6¾	"
" of head	8	"
" of shaft of middle	5½	"
Tibia—		
Length from internal tuberosity to internal malleolus	18⅝	inches.
Width of tibia and fibula at ankle	4	"
Circumference of shaft (middle)	5⅜	"
Foot—		
Length	13¾	inches.
Depth of tarsal arch	4¼	"
Girth of foot	10½	"
First metacarpal (length)	3	"

There was a distinct, bossy, "velvety"-looking elevation of the postero-internal surfaces of both tibiæ in their middle third.

I have ventured to call this case one of acromegaly on the following grounds:

1. The excessive development and peculiar shape of the hands, fingers, feet, jaw, nasal bones, and frontal sinuses.

2. The hypertrophy of the pituitary body and enormous size of the pituitary fossa.

3. The history of mental deficiency and long-standing progressive failure of strength, ending at last in death by syncope.

The enlargement of the pituitary body would appear to be the principal pathological characteristic of this disease, as it has been found to be present in ten out of the twelve cases, hitherto reported, in which autopsies were held. Its probable size in this case would appear to conform pretty closely to the average hypertrophy as reported, which ranges from one inch to one and one-quarter inches in antero-posterior and one and one-fifth inches to one and two-thirds inches in transverse diameter, the diameters of the pituitary fossa here being one and one-fourth and one and one-half inches respectively.

Of course, the interesting question suggests itself at once: What connection, if any, exists between the acromegaly and the giantism? and although the facts at our disposal are so few that any speculation upon the subject must be purely tentative, yet one is tempted to string them together upon some sort of a theory.

In the first place, it is interesting to note that giantism so far as accurately recorded would appear to be actually mainly an "acromegaly" extending to the whole extremity (both upper and lower) instead of merely confined to the last segment, the lower limb contributing such a large proportion of the excess of height. An approach to this condition even is recorded in some of the cases of acromegaly occurring in adult life in which not only the hand but the forearm and leg were enlarged (Pel, Dercum, Long).

Arnold[1] reports a case where the shoulder-girdle was thickened, and Berkley[2] one where the clavicles were enlarged. Dercum[3] records another where forearms, legs, and chest were greatly enlarged. The scapula and pelvis were enlarged in Osborne's[4] case. The forearms, patellæ, and clavicles in Pel's[5] case, and the forearm and leg in Long's.[6] The bones of the leg were thickened in Pechardre's case.[7]

In the four instances above, where the weight was given, the average was 215½ pounds.

Then, again, the picture of the giant given almost unanimously by secular (non-romantic) literature is that of a loose-jointed, weak-minded, stoop-shouldered sort of a being, with splay feet, huge hands, and projecting features.

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[1] Beitrage zur Pathologischen Anatomie, Band x., No. 1.

[2] Johns Hopkins Hospital Bulletin, September, 1892.

[3] AMERICAN JOURNAL OF THE MEDICAL SCIENCES, March, 1893.

[4] Ibid., June, 1892.

[5] Berliner klin. Wochenschrift, 1891, No. 3.

[6] Lehigh Valley Medical Magazine, 1891, No. 3.

[7] Revue de Méd., February, 1890.

The condition itself appears to be almost a diseased one, as the vast majority of these "freaks" die young, and from the few actual records obtainable by me none pass middle life. The ages at death which I have been able to find given are:

	Height.	Age at death.
Charles Byrne	8 feet 2 inches.	22 years.
McGrath	8 " 6 "	20 "
Winkelmaier	8 " 9 "	22 "
James Toller	7 "	24 "
Tall girl of Basle	7 "	in childhood.

We must remember that the actual range of human stature even in giants is much more limited than is popularly supposed or even than is usually assumed by most of us; popular literature abounds with nine-foot and ten-foot men, but statures above eight feet are extremely rare, and Du Quetelet even declares that the tallest man reliably recorded was Frederic the Great's "Scottish Giant," who stood eight feet three inches. "Chang," the Chinese giant, was only seven feet eight inches in height, and Patrick Cotter seven feet ten inches, while the majority of "giants" actually barely reach seven feet; and it does not seem at all incredible that the same nutritive disturbance which can add an inch to the hand or jaw of an adult can literally "add a cubit to his stature" if beginning its operation during the fœtal or infant life.

Indeed, the former would, abstractly considered, appear the more remarkable of the two. In adult life the increase merely occurs at the points of least resistance—the ends of the extremities and features, or, as Klebe asserts, the ends of the long bones.

The situation of the characteristic pathologic change in the pituitary body is itself extremely interesting and suggestive from an embryonic point of view.

Little as is known of the function or physiologic relations of this "gland," it is generally regarded as marking the point of junction of the spinal and alimentary canals (neurenteric canal) and termination of the notochord. This makes it the "uppermost" end of that neurenteric loop which bounds the stature of the embryo and, thus developmentally, the "highest" point in the body, so that one would almost expect upon *à priori* grounds to find at this point marked traces of any nutritive disturbance affecting the length or size of the body or appendages.

The connection becomes still more suggestive if we accept Beard's ably supported view that the pituitary and pineal bodies, together with the pineal "eye" in *Hatteria*, represent the remains of the primordial mouth opening axially (from which the present mouth and pharynx are a secondary development laterally), and round which the encephalon developed after the fashion of the œsophageal ganglia in Molluscs, and "œsophageal nerve-collar" in Crustaceans, to preside over the structures concerned in securing food-materials.

As this is at bottom the primary and essential function of the extremities (including the jaws) we should hardly be surprised to find their nutrition in some way presided over or represented in this region.

Would it not appear probable that at least one form of giantism is merely acromegaly beginning in fœtal or infant life? And that the pituitary body has some title to be regarded as a "growth-centre for the entire body? From the measurements already made in a half-finished investigation of the size and shape of the pituitary fossa in the skulls of cretins and dwarfs it would appear to be almost as markedly contracted in these cases as it is enlarged in giantism and acromegaly. I also find, on comparing the skulls of the anthropoid apes, that the gorilla, who, in jaws, frontal sinuses, hands, feet, and dorsal kyphosis is almost ludicrously "acromegalic," has in five specimens out of six the characteristic large bowl-shaped pituitary fossa and thick "swollen" petrous bars.

NOTE.—Since the abstract of the above was read at Washington, Dr. C. L. Dana, of New York, has reported in an extremely interesting paper (*Journal of Nervous and Mental Disease*, November, 1893) two similar cases. One almost exactly parallel, in an Indian from Bolivia, 6 feet 7 inches in height and weighing 300 pounds, who presented a well-marked case of acromegaly, including enlargement of the pituitary body. He died at the age of thirty years with symptoms extremely similar to Aama's.

The other case was of a giant, 7 feet 4 inches in height and weighing 325 pounds at the age of twenty years, who presented many acromegalic symptoms, including enormous feet and hands, kyphosis, sclerosis, coarse hair, feeble muscular development, and a curious enlargement of the nasal bones and jaws on the left side.

Dr. Dana supplies a valuable "missing link" in the chain of my suggestions, by giving a list of six other cases of the disease in which the height exceeded 6 feet (ranging from 6 feet to 6 feet 4 inches) and the average weight was 242⅔ pounds.

While writing the above my attention was attracted by a fact which seemed, even then, of suggestive interest in this connection. It was, however, then almost an isolated observation, but I have since met with several other similar coincidences, and still others have been reported in current medical literature.

This is the remarkable "dwarfing" effect upon both stature and general nutrition which is produced by lymphadenoid enlargements of the pharyngeal tonsils—the familiar "p. n. g." (post-nasal growths) of our throat clinics—in children, and the rapid increase in bodily size and weight which follows their removel or reduction.

I have had in my own practice during the past two years six cases of children from nine to twelve years of age with post-nasal growths, who were undersized, under weight, anæmic, and generally neurasthenic, and who a year after the removal or absorption of the growth gained from two to four inches in height, and from five to fifteen pounds in weight, with a proportionate improvement of their nutrition, became "different children," in fact, as the parents of several of them informed me.

Of course, I am aware that this is just the period for "growing-spells" in children, and these results may be nothing more than accidental coincidences; but some degree of this same condition and improvement I have seen in every case of post-nasal adenoids which has been under my care during the past two years, and the same singular coincidence has been noted and commented upon by no less accurate and distinguished observer than Solomon Solis-Cohen in one of his clinical lectures.

This change must be a reflex one, for the trifling clearing of the respiratory passages effected is utterly inadequate to account for it, and as the pharyngeal "bursa-tonsil" was originally directly continuous, and is developmentally and structurally identical with the lower lobe of the pituitary body, the suggestion is an alluring one that disease of the former acts by reflex inhibition upon the "somatic-growth" centre in the latter, just as direct disease of the latter seems to be associated with both acromegaly and giantism.

Could this association throw any gleam of light upon that well-known form of malnutrition accompanying enlargement of the faucial tonsil, for which all the explanations so far offered have been so almost childishly inadequate? Their enlargement does not really interfere to any appreciable degree either with deglutition or respiration, and yet it produces a rank crop of thoracic, hæmic, abdominal, and nervous symptoms.

As Harrison Allen has well pointed out, there is really an almost continuous ring of "tonsillar" (adenoid) tissue round the alimentary canal just behind the mouth cavity, of which the superior, lateral, and inferior aggregations are known as the pharyngeal, faucial, and lingual tonsils respectively, and actual investigation has shown that both upper and lower may be enlarged together with the lateral.

REVIEWS.

Ectopic Pregnancy; its Etiology, Classification, Embryology, Diagnosis, and Treatment. By J. Clarence Webster, B.A., M.D., F.R.C.P. Ed., Assistant to the Professor of Midwifery and Diseases of Women and Children in the University of Edinburgh. Pp. 233. With 80 illustrations of naked-eye and microscopic appearances. Edinburgh and London: Young J. Pentland, 1895.

Ectopic pregnancy is so important and its recognition is attended with such difficulty in complicated cases that a monograph upon the subject from a competent authority cannot fail to be of interest and value.

The writer of the book under consideration has had ample opportunity to study his subject; while his previous contributions to medical literature justify the expectations of the reader that this book will prove of decided value.

He first considers the conditions under which the formation of ectopic pregnancy is possible. He draws attention very clearly to the fallacy of the belief that the lining epithelium of the Fallopian tube is composed of cells favorable for the development of the impregnated ovum. He uses the marked comparison that there is no more reason for supposing that the normal tube can perform the function of the uterus than for believing that the œsophagus can perform that of the stomach. As has been shown by Minot, Hart, and others, this lining of the tube plays an entirely negative part in the development of the ovum. As might be expected from our knowledge of the effects of inflammation in the lining membrane of the uterus, tubal inflammation is unfavorable to the development of tubal pregnancy.

It has been shown by experiment and observation that it is the presence of the ovum which causes any portion of the genital tract to take upon itself those changes necessary for the growth of the ovum, and not the normal structure of the part, which brings about the changes requisite for the development of the ovum.

The author's classification of ectopic gestation is based upon the belief that such cases are all primarily tubal so far as is known. He denies the possibility that the ovum can develop primarily in the peritoneal cavity, for he believes that the cells of the peritoneum will rapidly destroy an ovum.

There is no proof that gestation can begin in a Graafian follicle. Webster's classification is virtually that of primarily tubal pregnancy. His first division is ampullar, by far the most common. Most of these cases rupture, and among the secondary conditions which develop from them is that form of ectopic pregnancy where the ovum is outside the general peritoneal cavity. Among these are also the cases in which the gestation comes to an end and the embryo is discharged into some cavity of the body by suppuration.

When the cases rupture into the peritoneal cavity, if the membranes remain unbroken the fœtus may develop while the placenta remains in the tube; in other cases the patient dies from hemorrhage or peritonitis, while rarely the fœtus becomes changed and retained indefinitely.

The second variety is that of interstitial pregnancy, while the third class is infundibular; under this last title are included cases described by other writers as ovarian pregnancy.

Webster next studies the above varieties of these cases in detail, illustrating the various forms by woodcuts of frozen sections. His researches show that we are yet without proof that the fœtus can escape into the peritoneal sac free from membranes and develop to full time. He regards pelvic hematocele as caused by ruptured ectopic pregnancy in nearly all cases.

As regards the question of the growth of the placenta after the death of the fœtus, he agrees with Hart in stating that no proof that such growth occurs exists.

In considering the symptoms and signs of ectopic pregnancy the writer calls attention to the fact that these may sometimes be practically the same as in the cases of uterine gestation. There are, however, few cases in which a diagnosis cannot be made by thorough examination. The colicky pains, of which these patients complain, are caused by contractions in the affected tube.

The mammary changes in ectopic pregnancy are less than in normal cases; the movements of the fœtus are usually felt first on one side of the abdomen; the enlargement of the abdomen does not proceed so symmetrically as usual; while, owing to the fact that the tube is higher than the uterus, tubal pregnancy may cause enlargement higher in the abdomen than if the pregnancy were within the uterus.

Where the gestation-sac lies close to the abdominal wall movements can be detected by the stethoscope before the mother feels them, and with greater ease than in cases of normal pregnancy.

Fœtal heart-sounds are often heard with great distinctness. Among the many signs of ectopic pregnancy are the changes in the uterus, and the fact that these changes differ materially from those of normal pregnancy. In ectopic gestation the cervix is not usually so soft, and the uterus increases more in length than transversely or antero-posteriorly. It is a well-established fact that decidua may be expelled from the uterus during the progress of an ectopic pregnancy. Examination of such decidua, however, fails to reveal changes characteristic of normal gestation. Spurious labor is also a symptom of ectopic pregnancy whose determining cause is unknown. It is interesting to note that rupture of the sac during spurious labor is very rare.

In making a diagnosis it is very essential that a thorough bimanual examination be made, and that an anæsthetic, preferably chloroform, be employed. It should also be remembered that an examination through the rectum is often indispensable. It is most frequently found that the uterus lies in front, forming a part of the wall of the gestation-sac within, and easily detected on examination. Diagnosis is obscured by the complications which develop as the case goes on. At first pressure-symptoms are less pronounced than in normal cases, while, as the uterus increases in size, the kidneys may be so displaced as to interfere with their action and threaten eclampsia. Peritonitis almost invariably develops as the case goes on.

The signs of rupture of the gestation-sac are familiar to experienced examiners, and are clearly described. To make a complete diagnosis of ectopic gestation it must be proved that the uterus is not pregnant, that a swelling exists in the abdomen or pelvis, and that this swelling is caused by an ectopic pregnancy. In addition to bimanual examination under chloroform in doubtful cases, a sound should be introduced, and in addition a scraping of the mucous membrane lining the uterus should be made for examination by the microscope to detect decidual tissue. If this is done with antiseptic precautions, normal pregnancy need not be interrupted by this procedure, while the value of a positive diagnosis can be readily appreciated.

In the treatment of these cases the writer's views may be summarized as follows: All cases which justify interference require surgical treatment; the injection of morphine, use of electricity, and all other non-surgical procedures are considered of no value. The vaginal operation may be performed in those cases in which suppuration has occurred, the fœtus being macerated and the pus pointing downward into the vagina. Other cases require abdominal section. The majority of cases which reach the late months of pregnancy are those in which the ovum growing outside the peritoneum has pushed this membrane up; by carefully selecting the line of incision the peritoneal cavity need not be opened in operating upon these cases.

In tubal pregnancy the writer would remove the affected tube, ligating the ovarian artery and other bleeding vessels in the broad ligament. In cases where the fœtus has gradually escaped into the abdominal cavity, if the sac is intact, the broad ligament should be ligated below the whole mass and the mass removed. No effort should be made to remove the membranes if they are adherent. If the primary sac is firmly imbedded in the pelvis, the ovarian artery on that side may be ligated to lessen blood-supply to the maternal sinuses which supply the placenta, the sac being stuffed with gauze and the cord brought out at the lower end of the abdominal incision. After four or five days the patient should again be chloroformed, the placenta entirely removed, and the cavity again packed. In advanced extra-peritoneal cases there is no question of removing the gestation-sac; it is impossible to do this. In cases where the fœtus is in the abdomen, and the pregnancy has advanced to the seventh or eighth month, it might be thought advisable to allow the patient to go the full time in the hope of getting a living child. The author advises against delay. Such children are weaker than those born normally, and the mother's danger of delay is so great that the life of the fœtus should not be considered.

Webster closes this book with twenty-two plates, all microscopic, from cases of ectopic pregnancy. They are of great value and interest, and serve well to illustrate the book. We know of no treatise upon this subject which so clearly gives the latest and best surgical knowledge upon this important and difficult topic. The publisher presents the volume in an attractive and artistic form. The book will be a decided addition to the library of the obstetrician. E. P. D.

PATHOLOGY AND TREATMENT OF DISEASES OF THE SKIN. By MORIZ KAPOSI, Professor of Dermatology and Syphilis in the Vienna University. Translation of the last German edition, under the Supervision of JAMES C. JOHNSTON, M.D. Pp. 684. New York: William Wood & Co., 1895.

FOUR editions of this well-known work by the distinguished Austrian professor of dermatology, the worthy successor in his field of medicine to Hebra the elder, have appeared in German. The unquestioned ability of the author and the ease with which he expresses himself have made this work justly popular with readers of German, and we believe it will prove so to readers of English, now that it has been translated. The style of the subject-matter is didactic and in the form of lectures, but the matter presented has been duly weighed by the author, so that the result is a solid, systematic treatise on the diseases of the skin. The classification is in the main that brought forward by Professor Hebra fifty years ago. It has stood the test of time, and is championed by the author as being the best that has been put forth up to the present time. It is based on anatomy, pathological anatomy, and etiology, the latter occupying a comparatively insignificant place in the scheme.

The subject is discussed in a scientific, straightforward manner, strictly upon the lines laid down by the Vienna school, of which the author is now the chief exponent. The symptoms, and especially the pathology and the pathological anatomy, of the diseases are considered in detail; but the matter of treatment does not receive so much attention as in the works of most English and American authors. Local treatment for most diseases is more highly esteemed than internal remedies, and tolerably full directions are given in detail for the mode of treating by mechanical and other local means the most obstinate diseases, such as lupus. That internal medication and diet are not much esteemed by the author is plainly evidenced by the observation that in the treatment of acute eczema no internal remedies at all are alluded to, and that on the chronic forms of this disease the subject is very briefly dismissed in the following significant words: "We expect a positive cure from the proper use of local remedies in every case, even when it is believed to be due to other diseases, such as chlorosis, indigestion, chronic catarrh of the apices of the lungs, dysmenorrhœa, etc. In the latter event we also attach great importance to the internal treatment of the underlying disease. To scrofulous children we give cod-liver oil; to chlorotic and dysmenorrhœic women iron, arsenic and iron, or Fowler's solution." In further proof that eczema is looked upon by the author as a local disease, and that in no way in any case is it to be influenced by such therapeutic measures as diet, the following concluding words of this chapter may be quoted: "We are never opposed, in eczema, to the ingestion of salted or spiced food, cheese, caviare, etc., because they increase neither the eczema nor the itching, nor do they produce the mythical acridity of the blood."

The formulæ are expressed either in parts or in the metric system, the English or American reader missing the grains, drachms, and ounces with which he has all his life been familiar. Abbreviations of the names of drugs are constantly employed, with the result that in some cases the reader is left in doubt as to what is meant; for example, good results in acute eczema are claimed for "compresses of alumin. acet. in the form of Burow's liquor, 5-10 : 100 parts water."

Writers, chiefly those who have done special work, are referred to here and there, but no references are given. The reader who expects to find an array of prescriptions suitable to every stage of the disease being considered will be disappointed, for the author aims to teach principles rather than to give formulæ. The book is scientific and practical, and aims to present the most important features of each disease considered. The author steers clear of any tendency of taking the reader, as it were, into his confidence, by stating that this or that remedy or prescription is infallible in any given disease. The work, as a whole, is the product of a masterly mind. It is full of valuable observations stated in a manner that wins the sympathies of the scientific reader. It is a book that can be read and reread, and consulted with profit, because it contains the convictions of one who has studied closely the vast amount of disease that has passed before his trained and observing eyes.

The translation reads smoothly, and (presumably from the fourth German edition) is free rather than literal, as a comparison with the original will show, while here and there a sentence or a paragraph is abbreviated or omitted. In lichen ruber we note that the translator has not grasped the meaning of the word *Knötchen*, for the lesions characteristic of this disease are called "nodules," instead of papules. In a short preface to the book Dr. G. H. Fox, of New York, directs attention to the professional life and attainments of the distinguished author, and cordially recommends the work to American and English readers. To these friendly sentiments the reviewer would add his own high appreciation of the work as a whole. The book, however, is better suited, both in style and scope, to the practitioner than to the student; and, moreover, is better adapted to the German than to the American physician. The latter remark applies especially to the views enunciated concerning internal therapeutics. L. A. D.

Chirurgie du Rectum. Par E. Quénn and H. Hartman. Paris, 1895.

Rectal Surgery. By Quénn and Hartman.

A new monograph on the surgical diseases of the rectum, written after long clinical experience and with much candor and fairness, is to be welcomed as a useful addition to surgical literature. There can be no doubt that rectal diseases, like nearly all other forms of disease, require new and special study from the standpoint of bacteriology. The avenues of infection in this region are obvious and numerous, and their consequences are varied in their manifestations and grave in their ultimate results, especially if unrecognized or untreated.

It is, therefore, gratifying to find at least one-third of this work devoted to a consideration of the infectious diseases of the rectum, of which rectal strictures, ulcers, fistulæ, etc., may be considered to be the sequelæ. Indeed, many hemorrhoidal conditions are to be placed in the same category, the two exclusively mechanical theories of causation being gradually expanded at the present day to admit of new conceptions in which infection plays a prominent part. The practical part of the work is equally to be praised—the description of the course, symptoms, and complications of piles, fistulæ, fissures, abscesses, ulcers, all are admirable.

In many details of treatment the teachings differ from those received by the majority of American surgeons, but a fair consideration is given to each method and the conclusions arrived at are always impartially stated. The injective treatment of hemorrhoids is spoken of by the authors as the "American" method, although the views of American writers who oppose it are also given.

In the treatment of hemorrhoids, great weight is very properly placed on the dilatation of the sphincters, which is said to deserve a place among the curative procedures rather than among the preliminary steps leading to other operations. The experience of Fontan, who had himself a hemorrhoidal fissure, is quoted in support of this view. Excision and ligation and cauterization with the actual cautery are fully discussed.

In the treatment of fissure, dilatation is, of course, assigned the chief place.

The article on strictures contains a valuable table of cases and a very thorough *résumé* of existing methods.

In anal fistulæ they advocate resection and immediate suture. Quénn has been a prominent defender of this plan—theoretically an ideal one—for the last decade, so it is not surprising to find some space given to it in this book. It is to be wished that surgeons everywhere could get the results which he describes.

On the whole, the book is a valuable one from both the analytic and the practical standpoints, and is well worthy the perusal of every surgical teacher and operator. J. W. W.

The Physiology of the Carbohydrates—Their Application as Food and Relation to Diabetes. By F. W. Pavy, M.D., LL.D., F.R.S., Fellow of the Royal College of Physicians, Consulting Physician to and formerly Lecturer on Physiology and on the Practice of Medicine at Guy's Hospital. London: J. & A. Churchill, 1894.

Ever since the discovery of the glycogenic function of the liver by Claude Bernard the disposition of the carbohydrate constituents of the food has been a question of much interest, patient investigation, and controversy. The explanation offered by Bernard appeared to many to be insufficient to account for certain physiological facts or to afford a firm foundation for the erection of satisfactory views as to the pathology and treatment of diabetes.

The glycogenic function may be briefly stated as follows: The glucose into which the carbohydrates are converted by the action of the digestive fluid is absorbed into the blood of the portal vein and carried to the liver, where, by the action of the cells, it is abstracted, dehydrated, and temporarily deposited under the form of the non-diffusible body, glycogen. At a subsequent period, and in proportion to the needs of the economy, the liver-cells, through the agency of a ferment, again transform the glycogen into glucose and return it to the circulation, by which it is transported to the systemic capillaries, where it disappears, and is presumably applied to the purposes of nutrition. The blood of the hepatic vein, therefore, contains a larger percentage of sugar than the blood of any other part of the body, and the arterial more than the venous blood. Should there be a failure on the part of the liver-cells to abstract the sugar, it will pass into the general circulation, from which it would be eliminated by the kidneys, and a temporary diabetes at least would be established.

These views of Bernard, though widely accepted, have been antagonized by Dr. Pavy in a series of articles based on apparently most accurate experimentation, extending from 1860 to the present time. A summary of all his experiments, with the conclusions deducible from them, are embraced in the present work, which constitutes a most valuable contribution to medical and physiological science.

In opposition to the views of Bernard, Dr. Pavy states that the blood on the cardiac side of the liver never, under normal circumstances, contains more sugar than is to be found in any part of the circulation (excepting the portal during digestion), and which amounts to no more than from 0.6 to a little over 1 per 1000 part. During the passage of the blood through the hepatic capillaries practically all the absorbed sugar is abstracted and converted into glycogen. In this manner the general circulation is shielded from any excess of sugar.

To account for the presence of sugar in muscles, placenta, spleen, and other organs, Dr. Pavy assumed the existence of a carbohydrate compound in the protoplasmic basis of the tissues, which made its appearance, at the time of disintegration or cleavage, under the form of sugar. Landwehr had demonstrated that the albuminoid body, mucin, could be made to yield a non-reducing carbohydrate which by certain reagents is convertible into a cupric oxide reducing sugar. By the employment of various methods Dr. Pavy has been enabled to demonstrate the glucoside constitution of proteid material in general, and thus furnish a chemical and physiological explanation for the appearance of sugar in the body, even in the absence of all sugar or starch in the food. All normal katabolism is attended by the production of sugar. The cleavage of proteids by the digestive ferments liberates a certain quantity ot sugar. Though glycogen is readily converted into glucose, Dr. Pavy denies that this change ever takes place during life in the liver-cells, or that they are ever in a more saccharine condition than any other part of the system; that the liver stands in the same relation as other structures, not only as regards the amount, but likewise the nature of the sugar present; that the sugar obtained from the liver after death must be regarded as a post-mortem product, and not as a result of normal physiological processes.

The liver neither forms sugar to be discharged into the circulation nor temporarily stores up the absorbed glucose under the form of glycogen, to be subsequently hydrated and discharged into the circulation, but, on the contrary, does the very reverse. Its office is to arrest the passage of the sugar; to offer a line of defence against its escape from the portal into the hepatic blood. In proportion as this line of defence is insufficient will be the escape of sugar into the general circulation, an increase in the sugar percentage, and its immediate elimination by the kidneys.

The urine always contains sugar, as Dr. Pavy demonstrated by the employment of the phenylhydrazine test. The amount is in proportion to that existing in the blood, with which the quantity in the urine rises and falls. The latter may be taken as an index of the former.

The theory of glycogenesis offers no clue to the final disposition of sugar in the system. According to Dr. Pavy, all carbohydrates when brought into relation with living protoplasm experience three changes: 1. Transmutation, by which is understood the reduction of glucose through dehydration to glycogen for storage-purposes. 2. Application to the production of proteid material. 3. Transformation into fat. The second process, the formation of complex proteids, through the synthesis of peptones and sugar, takes place very largely in the epithelial cells of the intestinal villi. This synthesis is regarded as one of the most important functions of the protoplasm of these cells. In this way the blood is furnished with characteristic albuminous compounds necessary to the construction of tissues. The third process, the transformation of carbohydrates into fat, an indisputable fact, is also effected by the synthetic power of protoplasm somewhere in the body, and of all places none is more propitiously circumstanced to meet all the requirements of the problem than the intestinal villi.

All carbohydrate material which has escaped combination with peptones or conversion into fat by the villi epithelium becomes transmuted into glycogen by the liver. In the liver-cells and by their agency glycogen is likewise transformed into fat, though the process is not a direct one, but one in which the production of a proteid plays an intermediate part.

Diabetes arises from two causes: 1. An ineffectual abstraction and storage of sugar, due to some impairment in the activity of the liver-cells. The sugar thus escaping into the general circulation is promptly excreted by the kidneys. 2. A rapid cleavage of the proteid constituents of the tissues in consequence of some profound alteration of the general nutritive process, whereby sugar is liberated in unusual quantities. The first form can be completely controlled by dietetic management, the second only so to a partial extent. These conclusions are based on an analysis of some 2642 cases. Whatever may be the outcome of Dr. Pavy's hypothesis, there can be no doubt as to the value of his experimental researches. This work will long be regarded as one of the most valuable contributions to the physiology of the carbohydrates. No one can be said to be abreast of this problem who has not carefully read this work. A. P. B.

A MANUAL OF HYGIENE. By MARY TAYLOR BISSELL, M.D., Professor of Hygiene in the Woman's Medical College of the New York Infirmary for Women and Children. Pp. 338. New York: The Baker & Taylor Co., 1894.

THIS book, which Dr. Bissell in her preface says "is not offered as a substitute for the many elaborate treatises on the subject," is so much better than many of the latter that one cannot help entertaining the hope that some day she may be inspired to offer a treatise which will rank with the very best. Unlike many writers on hygiene, Dr. Bissell, before attempting a text-book, has evidently given her subject much study, the result of which is a book ably, gracefully, and entertainingly written. It is true that the book is not perfect. What work on hygiene is? It contains mistakes here and there, many of them evidently from oversight; but the defects are as nothing when one considers the admirable qualities of the book as a whole. From the evident care which has been bestowed on the preparation of this, the first edition, one may be certain that in future editions the mistakes will be rectified and all advances in the science duly noted. C. H.

TEXT-BOOK OF HYGIENE. A COMPREHENSIVE TREATISE OF THE PRINCIPLES AND PRACTICE OF PREVENTIVE MEDICINE FROM AN AMERICAN STANDPOINT. By GEORGE H. ROHÉ, M.D. Third edition. Pp. 553. Philadelphia: The F. A. Davis Company, 1894.

THERE was no excuse whatever for the original appearance of this book in 1884, and the same is true of the present edition. It is a pity that so much that is good should be mixed in with so much that is not only distinctly bad, but so bad as to make the work worse than useless as a text-book. The chapters which may be called good are those on Industrial Hygiene, Marine Hygiene, Quarantine, History of Epidemics, and Antiseptics, Disinfectants, and Deodorants. The other chapters are not up to the standard of even respectable mediocrity. The preface states, "In this edition every chapter has been subjected to a careful revision." How thorough this revision has been can be judged of by this gem, which, except for a slight change in the punctuation, is as it appeared in the first edition: "If the hardness is due to carbonates it is dissipated by heat, as in boiling the water; the carbon dioxide is driven off, and the base (calcium or magnesium oxide) is precipitated upon the bottom and sides of the vessel. This is termed the 'removable hardness.'"

Following this in the present edition is the following strikingly original method for the determination of hardness:

"To a definitely measured quantity of water (say 100 c.cm.) in a graduated burette, a quantity of the soap-solution is added and the mixture shaken up; so long as there are dissolved lime and magnesium salts in the water the soap is decomposed and no lather is formed. Soap-solution is now added gradually, and the shaking repeated until there is evidence of saponification by the formation of a more or less permanent lather or froth." We have here not only a unique method of using a burette, but a novel interpretation of the meaning of saponification.

These passages are but fair samples of the many illustrations, in which the book abounds, of the danger of attempting to handle subjects with which one is unfamiliar. Should the book reach an undeserved fourth edition it is to be hoped that it will be carefully revised and very largely rewritten. C. F. C.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,

PROFESSOR OF CLINICAL MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO ST. MARK'S HOSPITAL.

The Treatment of Tuberculosis by Ichthyol.

Dr. L. Guido Scarpa has used the ammonium preparation during the past year with excellent results. The drug not only has a reducing action upon tissues, rendering them anæmic, contracting the bloodvessels, antiphlogistic and even analgesic, but also as an antiseptic it has a direct influence upon pathogenic bacteria, especially upon the streptococcus and diphtheria bacillus, to a less degree upon the bacillus pyocyaneus, typhus, cholera, and malignant pustule bacilli. It is also a conservator of tissue-waste, and can be borne in large doses by the alimentary tract. From the 150 cases under observation, in which the drug was used in solution (1 to 3) in water, glycerin, rectified alcohol, or oil of peppermint, the last being used to conceal the disagreeable odor, the results were encouraging. Of this mixture from 20 to 200 drops were taken each day well diluted in water, 10 to 15 ounces. The patients soon become accustomed to the disagreeable odor and taste, and no untoward symptoms have been noticed. It seems to be a valuable remedy which may replace guaiacol, without, however, possessing the disadvantages of the latter.—*Therapeutische Wochenschrift*, 1895, No. 17, S. 342.

Is Antitoxin Curative in Diphtheria?

Dr. Joseph E. Winters presents a very scholarly paper which is based upon three months' daily observation in the Willard Parker Hospital, where 154 cases of diphtheria were treated with antitoxin. Taking four cases admitted in one day as a text, he states that in not one single case has there been the least evidence that the formation of the pseudo-membrane was checked, that the exfoliation of the pseudo-membrane was hastened, or that the throat was free from membrane earlier than in cases which have not been treated by antitoxin. In not a single septic case has the antitoxin made the least impression upon the symptoms. The toxæmia has not in one instance been relieved or lessened. There has been no indication in the character or frequency of the pulse, nor in the general condition of the patient, that a specific for the toxæmia had been administered. During the first three months of 1894 the death-rate at this hospital without antitoxin was 32 per cent.; during the corresponding months of 1895, with antitoxin treatment, the death-rate was 28 per cent., and this, too, when diphtheria was far milder than it was one year previous. The serum used in the early part of the antitoxin treatment was so weak that it was stated that but little could be expected of it. The record showed that the cases treated with the weaker serum did better than those which were treated with the stronger serum, and that those who had the smaller dose of serum did better than those who had a larger dose. In fact, a careful study of the individual cases will show that there is no relation between the antitoxin treatment and the recoveries. As to the untoward or unfavorable effects of the antitoxin treatment, it was found that babies who presented but slight clinical evidence of diphtheria after receiving antitoxin may develop an antitoxin infection, of which the symptoms may gradually subside, leaving them emaciated and extremely anæmic, or there may be a fluctuating temperature ranging from 99° to 106.8° F., and existing for days together. Horse-serum dissolves human blood-corpuscles, and thereby produces new elements of decomposition. The condition of these babies was one of antitoxin septicæmia, brought about by the influence of the antitoxin in the blood. Further evidence of septicæmia is to be found in occasional suppurations showing a temperature-range such as has not been seen since the introduction of aseptic surgery. In some cases of death the necropsy has shown that the patients had recovered from the diphtheria, but had died from pneumonia; this pneumonia is that of septicæmia, and this in turn was induced by antitoxin. Another danger is that of nephritis, which can be fatal, as was shown by Lennox Browne (six out of eight cases treated by antitoxin) and Benda (thirty-three out of thirty-nine deaths from the antitoxin treatment). Further dangers may arise from its action upon the nervous system, and varies according to individual susceptibility; death may speedily ensue. The use of the antitoxin may be immediately dangerous to life through its influence on the kidneys and on the nervous system, and, remotely, through its influence on the blood.—*New York Medical Record*, 1895, vol. xlvii. p. 501.

The Treatment of Diphtheria.

Dr. D. Braden Kyle states that the infected mucous membrane surfaces should be frequently and thoroughly cleansed. Loeffler has been able with his toluol solution to obtain as good results as with the serum treatment. The solution consists of alcohol 60, toluol 36, liquor ferri sesquichloridi 4, which is highly germicidal in that it will destroy pure cultures of the Klebs-Loeffler bacillus and also of the germs closely allied to this disease, especially the streptococcus, when exposed to it for only a few seconds. The infected areas are swabbed with this solution every two to four hours, the membrane readily dissolving. Equally good results have been obtained by substituting creolin for the iron, and menthol can be added to relieve the pain.—*Therapeutic Gazette*, 1895, No. 4, p. 225.

THE TREATMENT OF LUPUS BY CANTHARIDIN.

DR. O. LIEBRICH states that a remedy for tuberculosis must be something other than that which destroys tubercle bacilli alone, but must have as well some effect upon the vital forces. After presenting the peculiar action of the drug and showing that medicinal doses, even if continued for two and one-half years (case cited), will not give rise to any pathological changes in the kidneys, he points out its beneficial effects upon general symptoms. Cantharidin can be given internally as a sodium cantharidinate or as the pure drug dissolved in tincture of orange-peel (1 to 5000), or by hypodermatic injection. From the results of his treatment he concludes that the dogma that lupus vulgaris cannot be cured without cicatricial tissue is untrue, and demonstrates that this drug has a curative action.—*Therapeutische Monatshefte*, 1895, Heft 4, S. 167.

LOSOPHAN IN DERMATOLOGY.

DR. I. ABBOTT CANTRELL has experimented with this drug, which is tri-iodocresol, and is produced by the action of iodine upon m-oxytoluic acid, in the presence of an alkali. It was used as an ointment in from 2 to 5 per cent. with petrolatum; as dusting-powder with starch, 1 to 15 per cent.; in solution in alcohol and water, 1 to 5 per cent. It was used in 111 cases: eczema, 43; scabies, 23; pediculosis vestimentorum, 5; ringworm, 16; impetigo contagiosa, 8; alopecia areata, 2; dermatitis venenata, 2; furuncle, 2; and seborrhœa, 2 cases. From this experience he concludes: 1. It has proved to be entirely inefficacious in almost every disease of the skin. 2. Tinea sycosis was cured in one instance, but after two months' treatment. 3. It possibly may be beneficial in acne. 4. It is a waste of time for any one to make use of it in treating diseases of the skin.—*Therapeutic Gazette*, 1895, No. 4, p. 221.

MALT EXTRACT AND DIASTASE.

PROF. JOHN M. FRANCIS states that malt extract contains not starch but dextrin, soluble starch, and maltose, small quantities of albumin, gum, and inorganic salts, and, more important than all, the portion of diastase which was not consumed by the starch or destroyed in the process of evaporation. If it is marketed in the liquid form a preservative is added, usually alcohol, sometimes glycerin, which does not serve the purpose so well, and in the cheaper forms, borax, boric acid, and salicylic acid. No matter what precautions are taken they gradually but surely lose their diastasic activity. These extracts have two functions; to afford a supply of amylaceous food for a weak and diseased stomach, and in a predigested condition, ready to be assimilated without the effort of physiological preparation—in this *rôle* its field of usefulness is very broad. Second, we may employ malt extract to afford an extra supply of diastase for the digestion of food which has already been ingested, and which the stomach seems unable to dispose of in the proper manner. Nearly two-thirds of our food consists of starches, and we probably overlook the greater source of digestive troubles in our efforts to assure the disintegration of the fats and proteids. If, then, there is frequent need of an extra supply of diastase, it naturally follows that the best malt extract is the one containing the most available diastase. To meet this indication it would be well to have a diastase pure and simple—one which can be dispensed in pills, tablets, or powders; which occupies a small space; which will retain its activity in any climate; which is concentrated enough that in moderate dose it will materially aid in the digestion of the bread, cakes, and pastry which are usually presented in such a gummy, glutinous, or compacted mass, or so permeated by grease that the action of the diastasic fluid is greatly retarded. That this is possible has been shown by the preparation of diastase, in an experimental way, of which one part will dissolve 50,000 parts of starch. Considering the large number of sources of diastase there is likely to be a demand for something more powerful than the ordinary malt extract, namely, a pure diastase meeting the requirements noted above. —*Bulletin of Pharmacy*, 1895, No. 5, p. 200.

GUAIACOL.

M. E. BLAISE administers this drug in daily doses of from seven to twenty grains with benefit in pulmonary tuberculosis. Those patients who acquire an unconquerable dislike for cod-liver oil may be able to take this remedy if guaiacol is added to it, which also greatly aids its absorption. If dissolved in a sterilized bland oil, it may be given hypodermatically in from 20 to 50 per cent. solutions. In general it is well borne by the stomach; this tolerance being explained by its anæsthetic properties, which have been utilized in laryngology. Its valuable antipyretic effects when used externally are well known. It is eliminated by the kidneys, commencing very shortly after its administration, reaching its maximum between the second and fourth hour, and after twenty-four hours the urine contains no trace of the drug. It is excreted as potassium guaiacol-sulphonate, about 55 per cent. of the total amount ingested. Not only is it an antipyretic when locally applied, but it is also analgesic in acute or chronic rheumatism, intercostal pain, neuralgias, and it has been used in pleurisy with tincture of iodine (3 to 25); in painful orchitis as an ointment with vaseline (3 or 5 to 30) it has given good results. The best application as an antithermic is with equal parts of anhydrous glycerin. The synthetic guaiacol is preferred to that of fractional distillation.—*Les Nouveau Remèdes*, 1895, No. 9, p. 201.

THE HYGIENE OF SANATORIA FOR PATIENTS SUFFERING FROM PHTHISIS.

DR. NETTER formulates the following rules which are in part applicable to those dwelling at home: The residence should be so situated that it is not exposed to the prevailing winds. About the house should be a zone of isolation devoted to a park and to cultivated land, necessary as well for the patient, who should be in the open air, which is the basis of the treatment of tuberculosis. Expectoration should be only into cups containing a certain quantity of water. These cups should be disinfected every day. There should be an oven under the charge of a skilled and conscientious attendant. The linen should be delivered to the laundry only after sterilization in the oven. The room should be disinfected before receiving a new occupant, and to facilitate this the floor and walls should be so constructed that they can be washed and brushed with antiseptic solutions; the floors varnished, or, better, covered with linoleum ; the walls painted in oil. The dejecta should be disinfected.—*Journal des Praticiens*, 1895, No. 19, p. 292.

THE TREATMENT OF TUBERCULOSIS.

DR. FEDOR SCHMEY notes the rarity, on necropsy, of an uncomplicated tubercle bacillus infection, and points out the inefficacy of tuberculin in these cases of mixed infection. He makes use of gelatin capsules, each containing five grains of balsam of Peru and three grains of guaiacol, three capsules three times daily during the meal, and this number is to be increased until twenty capsules *per diem* are taken. It is necessary to take as many as a thousand capsules. In addition to this it is well to inhale by means of a spray the following: Balsam of Peru, 10; wine spirit, 30; distilled water, 200, each day. The alcohol is not only necessary, but as well useful in diminishing cough. For bone, joint, and skin tuberculosis subcutaneous injections of salts of cinnamic acid, particularly the sodium, have given good results, and apparently have not given rise to any symptoms of renal irritation. These observations made from a surgical standpoint tend to show the value of balsam of Peru, for the latter contains cinnamic acid. It is claimed that not only is the balsam of Peru useful against a mixed infection, but as well has a direct specific action upon the tubercle bacilli.—*Therapeutische Monatshefte*, 1895, Heft 5, S. 244.

THE TREATMENT OF TYPHOID FEVER.

DR. WM. EWART considers that the treatment is concerned with three great objects: (1) the patient, *i. e.*, the preservation of vitality and nutrition. (2) The disease itself, *i. e.*, the removal of the cause. (3) The effects of the disease, *i. e.*, the relief of the symptoms. Under the first heading, while paying due regard to the mechanical danger of too much movement of the diseased bowel, it is essential not to forget that it is also capable of being overloaded and strained by excessive bulk of fluid, especially if this should lead to flatulency. Above all, a well-supported nervous system and well-nourished tissues are the best defences against necrosis and against the danger of perforation. The importance of substantial support and of preservation of the gastric and upper intestinal functions renders the early administration of alcohol undesirable. It is worth considering whether we may not at suitable periods combine a fairly liberal portion of carbohydrate foods, which leave no appreciable residue, with milk. During the first ten to fourteen days there is little reason for abstaining from the lighter foods. Some of the principles contained in them may, after this time, be continued in fluid form, as fruit juices, vegetable broths. In the healing of ulcerations, especially along the alimentary tract, assistance is derived from a fresh vegetable diet. In the early stages of convalescence, articles of diet can be so selected that they will afford considerable nutrition without loading the bowel with much residue, as thin arrowroot, chocolate, honey, yolk of egg, maltine. Among the indications for treatment attention to the liver is important. In enteric fever it is practically immobilized for prolonged periods and deprived of a great deal of the pressure and movement connected with abdominal respiration, which is usually in abeyance. The physiological stimulation of the duodenal papillæ by the passage of food, owing to the exclusively fluid nature of the supplies, is reduced to a minimum, and reflex contraction of the gall-bladder ceases to be favored, and the bile, an antiseptic which surely reaches undecomposed the seat of the ulceration, is diminished. Anæmia, due to restricted alimentation, the original infection, and prolonged absorption of septic material from the bowel, is a prominent symptom. The local indications must be met by remedies introduced *per vias naturales*, and in order to insure the efficacy of any antiseptic introduced by the mouth, its administration must be continuous, since it cannot be given in concentrated doses. And since the remedy must expend its chief action on the stomach and on the whole intestine above the seat of the disease, and be partly absorbed by them, it is of the utmost importance that it should be incapable of doing any harm. The symptomatic indications cover the clearance of the bowel of offending matter and the restoration of the mucous membrane to as healthy condition as is possible, so that food may be absorbed. The first end may be reached by the administration of castor oil or calomel in a first purgative dose, and followed up with quarter or third of a grain doses repeated three or four times daily, either combined with small doses of opium or supplemented with more active aperients. The second indication is met by a strict fever-diet during the first few days of anorexia. As soon as the appetite and tongue improve, the patient may be prepared for his period of starvation by varied and nutritive, though light, supplies which leave but little insoluble residue. Of the various drug treatments, the use of mercury and iron is recommended. The advantage of the former as an aperient lies in its antiseptic properties. Twenty-minim doses of the tincture of ferric chloride and thirty minims of the solution of mercuric chloride are administered every four hours through the course of the disease. It is claimed that by this method the diarrhœa is controlled, the complexion and faculties are brighter, there is improvement in every direction, and speedy convalescence. There is a general tonic effect on the nervous system, beneficial effect on the blood, liver, and mucous membranes, and the above-mentioned control of the diarrhœa may be due to either local antisepsis or the astringent properties of the iron.—*Medical Press and Circular*, 1895, No. 2923, p. 505.

THE GLYCERO-PHOSPHATES.

DR. ALBERT ROBIN has completed a six years' study of these remedies, which have an elective action upon the nervous system, reawakening the failing nervous energy and stimulating it to activity. In comparing the effects produced by the injections of testicular fluids in which phosphorus in organic combination is one of the essential principles, we have simply an uncertain, variable, markedly changeable preparation replaced by a well-defined product of which the dose can be easily regulated. Subcutaneous injections of sodium glycero-phosphate increased the quantity of urine five times in eight; in general, the specific gravity lowers as the quantity increases; the solids increased five times in seven; and this increase indicates an acceleration of total nutrition. Both organic and inorganic changes are increased, the latter in a manner perhaps more constant. The nitrogenous metabolism increases; there is a better utilization of the disintegrated products, and a tendency toward a diminution of uric acid. In the majority of cases the total sulphuric acid increases as well as the coefficient of sulphur oxidation, so that the metabolism of organs rich in sulphur, as the liver, for example, and the evolution of sulphurous products become more complete. Sodium chloride increased six times in seven, corresponding to the clinical fact, an increase of appetite. These drugs do not tend toward the denutrition of organs rich in phosphorus, but, on the contrary, they act upon them as a means of preventing waste. And, further, they probably favor the assimilation of a small quantity of the alimentary phosphates. In a study of their effects upon lime-salts it was shown that there was an acceleration of the nutrition of bones, without, however, influencing in a corresponding manner the phosphorus-metabolism in the same tissues. They do not have a marked effect upon intestinal fermentations. Taken as a whole, these observations show the great value of the glycero-phosphates in checking the denutrition of the nervous system and in aiding its restoration to normal conditions. The indications for the use of these drugs do not fall under the title of any one disease, nor is any one disease a contraindication. They are useful when (1) there is a failure in nitrogenous metabolism, as, for instance, in chlorosis, chronic gout, diabetes, obesity, chronic pulmonary phthisis, chronic Bright's disease, phosphatic albuminuria, dyspepsias with gastric insufficiency and diminished hydrochloric acid, and debilitated old persons. (2) Cases of hepatic insufficiency, brick-dust sediment in the urine, urates tinged with uroerythrin. (3) Malnutrition of the nervous system, whether due to an exaggerated denutrition or insufficient assimilation. As examples: convalescence from acute diseases, especially from epidemic influenza, the various phosphaturias, a large number of neurasthenias when they follow phosphaturia, phosphoruria, dyspepsias from gastric insufficiency, intellectual fatigue with nervous *surmenage,* muscular atrophy, paralyses in general, pains of ataxia, tic douloureux of the face, sciatica, and chronic lumbago. No effect has been noted in mental diseases nor in progressive general paralysis. One case of Addison's disease improved. (4) In bone-diseases, as rhachitis, osteomalacia, fractures, and diseases of growth, the lime and magnesium glycerophosphates should be employed. In short, the glycero-phosphates should be considered as remedies for nervous depression. For subcutaneous injection the salts of lime, sodium, and magnesium alone have been used in solution in the percentage of 5 for lime and 20 for sodium; the amount injected representing from one to eight grains of the lime salt and from three to twenty grains of the sodium salt. Strict antiseptic precautions must be observed, as these solutions are excellent culture-media for many microbes. When given by the mouth the salts of lime, sodium, potassium, and magnesium can be given in daily dosage of from five to fifteen grains, preferably during the meal. The iron salt is administered in from one-and-a-half to five grains per day.—*Bulletin Général de Thérapeutique,* 1895, 18e liv., p. 385; 20e liv., p. 433.

LAVAGE OF THE STOMACH.

DR. FAUCHER insists that the tube which bears his name should be of the flexibility and size which he designated in his first communication made in

1879. With this one need not fear the nervous accidents, fatigue, possibility of hemorrhage, and various other accidents, even to complete failure, which have been cited as contra-indications to the use of this method. As to the indication for the operation, it depends entirely upon the contractility of the stomach. So long as there is gastric retention—that is, the food remains in the stomach for a period longer than the interval between meals—lavage has given good results, irrespective of the form of disease which gave rise to this retention.—*Revuė de Thêrapeutique*, 1895, No. 11, p. 331.

THE EFFECT OF HOT BATHS UPON CHRONIC CIRCULATORY DISTURBANCES.

DR. ALFRED HÖGERSTEDT has made use of the full baths of 30° R. [99.50° F.], and concludes that (1) we may expect from further investigation of the relation between blood-pressure and pulse, during the so-called palpitation, that the clinical diagnosis of the nature of these attacks may be substantially advanced. (2) So far as we may conclude from the observations cited, the irregular and suddenly arising pulse-acceleration and increasing blood-pressure, beginning at the same time and outlasting it, seems to belong with the earliest objective symptoms of coronary arterial sclerosis. While the increasing frequency of the pulse is only at the beginning of the attack, the higher blood-pressure was regularly so long apparent as the existence of the palpitations. So also the duration of the increased blood-pressure was according to the duration of the attack. In other words, the idea "subjective palpitation" is no longer permissible. (3) Since attacks of this kind continually make repeated claims upon the reserve strength of the left heart, it should be the purpose of the treatment of such patients to save the strength of the heart from the beginning. (4) Though the unfavorable reacting antagonism to the work of the heart which is found in the venous flow of the greater circulation is not brought about by the warm baths, and in spite of the impression that the warm bath in itself did not materially aid in relieving the palpitation, it is still impossible to answer fully the question whether the general action of the baths, in these cases, may be called a beneficial one. No more can be at present stated than that it may be taken for granted that the action of the warm bath on the vaso-tension may be relative to the direct antagonism of this by the excitation of the vasomotor centres which accompanies palpitation.—*St. Petersburger medicinische Wochenschrift*, 1895, No. 16, S. 141.

THE TREATMENT OF SYPHILIS.

DR. EDMUND SAALFELD cites two cases which go to show that mercury is not, in all cases, a specific. For patients who are, as frequently happens to syphilitics, in lowered general nutrition, somatose, a meat-preparation, is used with excellent results. Milk fills an important place, particularly in mercurial stomatitis when solid food is impossible; but the tendency of milk to cause diarrhœa, especially in patients using mercury, is increased, and this danger must be guarded against. Here, also, somatose is useful. It does not possess the unpleasant taste of more artificial meats, nor does it irritate the mucous membrane of the alimentary canal. It can be administered in teaspoonful doses three to four times daily, in milk or broth or barley-soup. It can be given with chocolate or cocoa, or as a somatose biscuit. It not only improves the nutrition, but as well increases the appetite and enables the patient to respond to specific treatment.—*Therapeutische Monatshefte*, 1895, Heft 5, S. 247.

MEDICINE.

UNDER THE CHARGE OF

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Peptonuria.

Senator gives a timely contribution to the vexed question of peptonuria (*Deutsche medicinische Wochenschrift*, 1895, No. 14, p. 217). The method of Salkowski was used, being carried out as follows: The urine, free from albumin, is treated with hydrochloric acid and precipitated with phosphormolybdic acid, the precipitate warmed and washed with water. It is then dissolved with dilute sodium hydrate solution and warmed until the solution acquires a yellowish color. After cooling the biuret-test is used. The procedure can be carried out in about five minutes, and, according to Salkowski, is almost as sensitive as Hofmeister's complicated method. Senator finds that peptonuria occurs frequently or regularly in certain diseases, as croupous pneumonia just before or after the crisis, in purulent meningitis, or peritonitis and empyema. It is much less frequent in articular rheumatism and has not been found in leukæmia. The diseases in which peptonuria occurs are usually not difficult to recognize, so that its demonstration is not very important. This statement, however, is not true of meningitis, and according to Senator, when peptonuria is present along with the other symptoms, that disease may be diagnosticated. An interesting case in this respect was that of a young man with a long-standing otitis media, who was taken sick with fever and pain in the head and neck. Repeated examinations showed no peptone in the urine and operation revealed a cholesteatoma. In confirmation of the work of von Noorden and Stadelmann it was found that the peptone in these cases was not Kühne's peptone, but albumose. This seemed in some cases to be protalbumose, but the reactions were not absolutely certain.

Lactic Acid and Carcinoma of the Stomach.

G. Klemperer (*Deutsche med. Wochenschrift*, 1895, No. 14, p. 218) has tested for lactic acid according to the method of Boas and reaches the following conclusions: The production of lactic acid in the stomach indicates long-continued stagnation of the contents. This occurs most frequently in carcinoma. There can be cancer of the stomach without lactic acid, just as there can be non-cancerous disease of the stomach with lactic acid. Nevertheless, Boas's test is of great practical value, though not specific. (In fifteen cases of cancer of the stomach lactic acid was absent in three.)

REMOVAL OF A PIECE OF PYLORIC MUCOUS MEMBRANE BY THE STOMACH-TUBE.

EBSTEIN (*Berliner klin. Wochenschrift*, 1895, No. 4) reports a case in which this accident happened, the fragment being found in the fenestrum of the tube. The case was one of chronic peritonitis with strictures and dilatations of the duodenum. Death occurred from septic peritonitis four days after a laparotomy. Neither loss of tissue nor cicatrix could be found in the stomach. Ebstein thinks this accident much more frequent than is usually believed. Position and size of the stomach, and, as in the case reported, adhesion with neighboring organs, favor the occurrence. The author advises distention before passing the sound in order to be able to form an idea of the extent and configuration of the stomach. The sound must be sufficiently thin; must not be removed too rapidly, but slowly, and while water is allowed to run in. The occurrence of vomiting while the tube is in the stomach necessitates special caution.

NEUROSES AND ANÆMIA.

REINERT (*Münchener med. Wochenschrift*, 1895, No. 14) has determined the hæmoglobin in a number of cases of neurotic disorder, including hysteria, neurasthenia, chorea, epilepsy, and migraine. Out of 48 cases of hysteria, 30 per cent. had 80 per cent. or more of hæmoglobin, which can be looked on as physiological. Forty-seven per cent. of the cases had from 70 to 80 per cent., 18 per cent. from 60 to 70 per cent., 1 case from 50 to 60 per cent., and 1 case 30 to 40 per cent. of hæmoglobin. Of 36 cases of neurasthenia, 13 had 85 per cent. or more, 21 had 70 to 80 per cent., and 2 had 60 to 70 per cent. The average in 6 cases of chorea was 72.9 per cent.; in 3 cases of epilepsy 74.6 per cent. In 70 per cent. of all the cases there was a diminution, usually slight, of the hæmoglobin. While in these cases the anæmia might be looked on as the anatomical basis of the disease, it must be remembered that the blood-alteration in many cases is secondary. However, impoverished blood reacts on the nervous system, so that the examination of the blood is important in the prophylaxis and treatment of neurotic disorders.

DIPHTHERIA ANTITOXIN AT THE CONGRESS FOR INTERNAL MEDICINE.

In the recent Congress in Munich, BAGINSKY, HEUBNER, WIDERHOFER, and RANKE all spoke in favor of the serum treatment of diphtheria. The following conclusions, stated by Baginsky, fairly represent the sentiments of the others. "The serum is a thoroughly effective remedy, the best so far used in diptheria. It is most effective in proportion as it is used early. A combination of this with measures formerly used, such as mild antiseptic treatment (gargles) of the local lesion is rational and useful. The use of antitoxin is not attended with serious accidents or diseases. The exanthemata, joint-affections, etc., are similar to those observed in diphtheria treated by older methods, and, even if more frequent than formerly, are not at all dangerous. The uncertainty as to the mode of action of the remedy should not affect its application, after the value of the method has been demonstrated empirically beyond doubt." **KOHTS** was not enthusiastic in his expressions, although he admitted that the local disease was often unmistakably checked by the antitoxin treatment. **SEITZ** spoke especially of the complications in cases treated with serum, based on one hundred and forty cases under his own observation. Renal symptoms, cardiac weakness, paralysis, and enlargement of the spleen are not more frequent under antitoxin treatment. The occurrence of skin-eruptions was more frequent, as were also pain and swelling in the joints. These did not interfere with perfect recovery. Diseases complicated with diphtheria, such as pertussis, pneumonia, severe heart-disease, tuberculosis, and osteomyelitis were made no worse by the specific treatment, and the effect of the latter was unmistakable. The use of the remedy as a prophylactic was not very warmly encouraged, the duration of immunity especially being uncertain, and the effect of the antitoxin in healthy bodies not sufficiently known.

PUNCTURE OF THE SPINAL CANAL.

This operation, originated by Quincke in 1891, and since then practised by many other German clinicians, has been performed more than one hundred times in eighty-six cases by **FÜRBRINGER.** He punctures in the second, third, or fourth interlaminar lumbar space, with the patient sitting and bending over instead of lying, as generally practised. The subarachnoid fluid is reached at a depth of from two to seven centimetres. In infants forced puncture and badly aimed needle may cause the latter to pierce the soft cartilage of the vertebræ and enter the aorta, an accident narrowly escaped by the author. Pain referred to the head, neck, or back is usually due more to aspiration than the puncture itself. For that reason it is better to allow the fluid to run out spontaneously than to aspirate. The amount of fluid varies from a few drops to 100 c.cm., and the force of the stream varies with the amount. Occasionally the flow is checked by the aspiration of a strand of the caûda equina. In one case slight injury of the cauda was followed by a sciatica-like pain; in another tremor of the leg. The greatest pressure and largest amount of fluid were observed in cases of basal meningitis or brain-tumor, but Fürbringer finds these features so contradictory as to be without practical value. In thirty-seven cases of tubercular meningitis, some of which could not be distinguished from typhoid fever, influenza, endocarditis, and sepsis, tubercle bacilli were found twenty-seven times, and in all of these cases the diagnosis was confirmed post mortem. In meningitis improvement did not follow puncture, but in a case of chronic hydrocephalus, with tubercles in the cerebellum and with frequent epileptiform attacks, repeated puncture gave relief. In two case of uræmia withdrawal of 90 c.cm. of fluid in one case and 50 c.cm. in the other did not affect the coma, and death occurred in both cases shortly afterward. In a case of hemorrhage in the lateral ventricle puncture of the spinal canal (post mortem) showed almost pure blood. In a case of hemorrhage into the fourth ventricle puncture during life was also positive. In cases of pneumococcus-meningitis puncture was of great clinical value, and the method promises to be of value in distinguishing bacterial diseases of the central nervous system. In the examination of tubercular cases the small fibrin and leucocyte bits found even in the clearest fluid in these cases revealed bacilli when the clear fluid did not. The centrifugal method was used as a control, but the diagnosis was always made without it. On the whole, the therapeutic value of the procedure deserves further study.—*Berliner klin. Wochenschrift*, 1895, No. 13, p. 273.

Disease of the Muscle of the Auricles.

Radasewsky (*Zeitschrift für klin. Med.*, Bd. 27, S. 381) thinks that the cardiac arhythmia of so-called chronic myocarditis is due to degeneration of the walls of the auricles and not of the ventricles. Previous workers have limited their observations almost entirely to the walls of the ventricles, and, although in many cases the changes in question are to be found there, it has not escaped notice that in some cases of severe fibroid degeneration of the ventricle the heart remained regular to the end. Radasewsky examined six hearts, after the method of Krehl, but including the auricles, and found that in the cases (two) of myocarditis with regular heart-rhythm the auricular wall was intact, whereas in the other cases it was more or less seriously affected. The author also calls attention to the diffuse fibroid degeneration of the heart-muscle, a condition of great importance to the clinician, but seldom recognized post mortem. This latter is due to the fact that only a careful microscopic examination can reveal the change.

Typhoid Fever.

Berg has analyzed 1626 cases of typhoid fever treated in the Leipzig clinic from 1880 to 1893. The treatment was purely expectant. Twenty-two cases were under five years of age; forty-six between five and ten. Two-thirds of all the cases were between fifteen and thirty years of age. The average mortality was 12.7 per cent., varying in different years from 7 per cent. (1884) to 18 per cent. (1883). The mortality increased from 8 to 9 per cent. in the second decade, to 60 per cent. in the eighth, but below the tenth year was as high as in the third decade (13 per cent.). In 27 per cent. of all cases fever lasted more than four weeks. The duration was not shorter in children than in adults. Relapses were observed in 3.3 per cent. of cases. Four patients had repeated relapses (three in one case). Recidive occurred in 12 per cent. of all cases. It was more frequent in women than in men, in children than in adults. Seventy-five per cent. of recidives followed mild or moderately mild cases. In most cases the recidive came on from two to twelve days after defervescence, and lasted six to twenty days. One case had a recidive on the seventy-seventh day. The longest recidive lasted six weeks. Less than 3 per cent. of recidives were fatal. The eruption was positively present in 80 per cent. of cases; doubtful in 5 per cent.; absent in 14 per cent. The spleen was palpable in 69 per cent. There was diarrhœa during the whole course in 25 per cent.; normal stools always in 4 per cent.; constipation in 16 per cent.; in the others alternating diarrhœa, constipation, and normal stools. Hemorrhage was observed in 5½ per cent. of cases. It began usually in the second week, but was seen as late as the fifty-fifth day. Hemorrhage was more frequent with the advance of age (3.8 per cent. up to fifteen years; 14.3 above the sixtieth year). The mortality of cases with hemorrhage was 38.2 per cent. Pregnancy in typhoid was almost always interrupted by abortion or premature birth. The course of such cases was usually most severe. The life of the fœtus was not affected. Psychoses occurred in 1 per cent. of cases, appearing usually during the fever, twice during recidive. Cataleptic phenomena were frequent. Pneumonia, usually hypostatic, occurred in 8.9 per cent. of cases, more frequently in the right lung. Bronchitis was present in two-thirds of all cases, usually short and mild. Pleurisy was observed thirteen times, being dry in six, serous in five, suppurative in two cases. Perforation of the intestine occurred in 2.2 per cent. It occurred most frequently between the twenty-first and thirtieth days. Albuminuria was noted in only 11.3 per cent. of all cases. Nephritis occurred in 2.8 per cent.. being much more frequent in men than in women. The process was hemorrhagic, and showed a mortality of 44.4 per cent. Cystitis was rare and of brief duration. Herpes was noted in 0.7 per cent. of cases, in part of them during convalescence. Angina occurred in 2.1 per cent.; parotitis in 0.5 per cent.; epistaxis in 3.1 per cent. of all cases. Death was due to severity of infection in 37 per cent.; to perforation in 16.5 per cent.; hemorrhage 8 per cent. For other details, especially regarding the rarer complications, the original may be consulted (*Deutsches Archiv für klin. Med.*, Bd. 54, S. 161).

HEART-DISEASE IN MASTURBATORS.

BACHUS (*Deutsches Archiv für klin. Med.*, Bd. 54, S. 201) calls attention to an affection of the heart which he has frequently encountered in masturbators. This is characterized by pain in the cardiac region, anxiety, and frequent annoying palpitation. The heart's action is disturbed in various ways, is frequent rather than slow, usually forcible, and often irregular and unequal. The sounds may be pure, or the first sound at the apex impure, or the second aortic or pulmonary accentuated. The pulse varies with the condition of the heart. Tension and size are usually not materially altered. The cause of the alteration is not easy to determine. That it is due to the increase of work on the part of the heart seems at first sight reasonable, since it has been claimed that blood-pressure is increased during coitus, yet, on the other hand, periodic increase in the work of the heart does not usually lead to hypertrophy. The diagnosis of the condition is based partly on the anamnesis, partly on exclusion of other causes. The treatment includes cessation of onanistic habits, and other unfavorable practises (tobacco, alcohol), as well as symptomatic treatment of the condition.

PULSE-RHYTHM IN HEALTH AND DISEASE.

From observations with the sphygmochronograph of Jaquet, HÜSLER (*Deutsches Archiv für klin. Med.*, Bd. 54, S. 229) concludes that the regularity of the pulse is only relative. Even in health the successive beats of the heart show rather marked irregularity, the causes of which cannot as yet be explained. They make it impossible, however, to define the limit of the physiological rhythm. On the other hand, aside from these variations, the heart shows a marked tendency to preserve its rhythmic action, even in the face of severe general disease or of lesions of the valves. For the production of arhythmia causes as yet unknown must act on the cardiac mechanism.

IRON IN THE TISSUES IN ANÆMIA.

STÜHLEN (*Deutsches Archiv für klin. Med.*, Bd. 54, S. 248) has investigated this subject recently in Quincke's clinic, using material from six cases having the clinical characteristics of pernicious anæmia and eight cases of severe secondary or mixed anæmia. The usual tests for iron were applied to the liver, spleen, kidneys, bone-marrow, and pancreas. These results are summarized as follows: 1. In most cases of severe anæmia, especially in pronounced pernicious anæmia, iron is deposited in the liver and spleen, and frequently also in the kidneys. 2. In some cases iron granules are deposited in the bone-marrow; in others not. 3. In severe anæmias due to repeated hemorrhages or exhausting discharges the organs mentioned give little or no iron-reaction. 4. In their extremes the cases of different kinds can be distinguished anatomically by the presence or absence of iron. 5. Less characteristic features are found in cases of uncertain origin, in which the clinical picture may resemble pernicious anæmia.

THE PATHOLOGY OF LEUKÆMIA.

Under the somewhat misleading title, "Changes in the Organs in Leukæmia," HINDENBURG (*Deutsches Archiv für klin. Med.*, Bd. 54, S. 209) announces a theory of the pathology of leukæmia, based partly on the examination of three cases before and after death, partly on conceptions of the origin of leucocytes not yet positively demonstrated. Hindenburg holds that in leukæmia the mitotic increase of a certain kind of leucocytes goes on in a pathological manner as the result of a cause ("noxa") as yet unknown. Usually the myelocytes are involved, sometimes other varieties of leucocytes. The cause of this predilection is quite unknown. Indirect division of the leucocytes affected takes place in the lymphoid organs, especially in the capillaries of the liver and in lymphatic new-growths, and in many cases in the greater circulation. The germinal centres take part in the increase only in lymphatic leukæmia. Different localizations of the leukæmic process seems to depend on the fact that various kinds of leucocytes show a preference for certain parts of the lymphatic apparatus. The newly formed cells enter the blood partly by way of the lymph-channel, partly directly, as in the spleen and bone-marrow. Entering the circulation and increasing there to some extent, the leukæmic blood is the result. The fact that besides the forms found in the organs in increased numbers other kinds of leucocytes occur in increased numbers in leukæmia, the author explains by a transformation of the former before undergoing dissolution. The question whether leukæmia is a disease of the blood or of the blood-forming organs the author thinks an idle one, since the fluid tissue called blood and the hematopoietic organs cannot be sharply separated. Finally, the author states that the idea that the leukæmic condition of the blood is due to decreased leucolysis is contradicted by his finding in the organs numbers of bodies which he thinks are degeneration-forms of leucocytes.

EXCRETION OF URIC ACID AND XANTHIN-BASES IN THE FECES.

A valuable contribution to the study of these important substances is made by WEINTRAUD (*Centralblatt für inner. Med.*, 1895, No. 18). His attention was called to the matter by examining the feces of a case of leukæmia for xanthin-bases and finding these in very large amount, being present in fact to about ten times the quantity excreted normally by the urine. Smaller quantities were constantly found in the feces of healthy persons, and of those sick with various diseases, so that Weintraud claims the xanthin-bases are normal constituents of feces. That these do not come already formed from food, or from nucleins in the food, the author demonstrated by feeding large quantities of food rich in nuclein (thymus) and finding that latter absorbed. The important discovery was made that the excretion of uric acid was enormously increased. It was also found that even after absolute milk-diet (in which xanthin-bases have not yet been found) these were nevertheless present in the feces. Xanthin-bases and uric acid were also found in the meconium of an infant with *atresia ani.* It would therefore appear that xanthin-bases (hypoxanthin being the chief form) are excreted either from the wall of the intestine or the glands which pour their secretions into the intestine. Incidentally the observations demonstrate the absorbability of nucleins in the intestine, the possibility of which has been denied by some.

CIRRHOSIS OF THE LIVER APPARENTLY CHECKED BY TAPPING.

LAUENSTEIN reported two cases of the above kind in the Aerztl. Verein in Hamburg (*Deutsches med. Wochenschrift*, 1895, No. 19. Vereins-Beilage, No. 13, p. 82). One case had a clear history of abuse of alcohol; in the other this was probable. In both cases the liver was enlarged. In the first case, after six tappings, the fluid did not reaccumulate during the two and a half years which had elapsed at the time the report was made. The patient had continued to use wine and beer, and had passed through an attack of delirium tremens. The liver became smaller. [The spleen was not enlarged at any time.] In the second case tapping was performed three times, after which the patient remained apparently well for several years. The liver became smaller. The spleen was large in the beginning and remained so.

THE CAUSE OF MURMURS IN THE HEART AND VESSELS.

It is well known that current explanations of the cause of cardiac and vascular murmurs in works on physical diagnosis ascribe these to eddies in the blood-current, although Kiwisch and T. Weber showed long ago that they must be due to vibrations in the walls of the vessels (or in the valves). This explanation is also given by Fick in his recent "Lehrbuch der medicinischen Physik," and there have always been a few clinicians who have held to this theory, though perhaps unable to give any reason for it. Recently GEIGEL (*Virchow's Archiv*, Bd. 140, Heft 2, S. 385) has investigated the matter according to well-known facts in physics. Assuming with Funke that the first sound of the heart corresponds to sound-vibrations at the rate of 200 per second, a murmur of the same pitch would require for its production, if due to eddies, a tube (the heart) one metre and fifty centimetres long. This shows the fallacy of the eddy theory, and leaves the theory of lateral vibrations in the walls or valves, due to the friction of the blood, the only rational one.

THE GENESIS OF EPILEPTIC ATTACKS.

From an extensive experimental study BECHTEREW concludes (*Neurologisches Centralblatt*, 1895, No. 9) that in adult animals irritation of the cortical centres can lead to epileptic attacks. If the basal ganglia take part in the attacks, they do so principally in the tonic spasms. Such things as mechanical irritation in the region of the pons, concussion, and intoxication can cause epileptic attacks of basal origin, but even in such cases the cortex takes part and gives the epileptic character to the convulsions.

MYOSITIS OSSIFICANS AND DISEASE OF THE SPINAL CORD.

EICHHORST (*Virchow's Archiv*, Bd. 139) describes two cases of this rare disease which add probability to the view that it is of spinal and trophoneurotic origin. In one case there was a congenital meningocele in the lower part of the lumbar cord, with abnormal development of hair in the vicinity. There was a perforating ulcer of the left great toe. In the second case there were marked tabes, diabetes insipidus, and finally perforating ulcer of the left foot, from which sepsis, eventually fatal, arose.

THE TREATMENT OF TYPHOID FEVER BY STERILE CULTURES OF BACILLUS PYOCYANEUS.

RUMPF has given a later report on this subject (*Bericht über die Verhandlungen des* 13 *Congress für innere Medicin. Centralblatt für innere Med.*, 1895, No. 21, p. 30). Streptococcus cultures had no effect whatever, whereas sterile cultures of blue-pus bacilli had an effect similar to that of the typhoid bacilli. Out of sixty-five cases 13 to 20 per cent. were not affected. In the others the injection caused a primary rise and a fall of temperature on the second day. In this way the stage of continued fever was cut short, became remittent, and apyrexia followed. The author ascribes this not to a specific action of the blue-pus bacilli, but rather to an irritation by which the body is excited to protective action. The experiments have at present a purely scientific value, as the dosage is uncertain and the activity of the cultures variable.

ABSORPTION BY THE RECTUM.

POSNER (*Ber. über die Verh. des* 13 *Congress für innere Med.*) has made some observations showing the rapidity of absorption of certain substances by the rectum. Certain solutions, like indigo-carmine, methylene-blue, etc., injected into the rectum appear within fifteen minutes in the bile and urine. Other substances, such as naphthol-green B, were not absorbed at all. The experiments confirm early observations as to the importance of the rectum in absorbing remedies or poisons, and led von Noorden to recommend anew the use of quinine suppositories in whooping-cough.

SURGERY.

UNDER THE CHARGE OF

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THE ASEPTIC TREATMENT OF SUPPURATION.

ZEIDLER (*Cent. für Chir.*, April 6, 1895) commends asepsis in the treatment of suppurating wounds. The method employed is the following: The field of operation is carefully prepared. After the ordinary operative technique the cavity is wiped out with sterilized gauze. As a rule, irrigation is not necessary; if it seems necessary, a sterile 0.6 per cent. salt-solution should be used. The wound is then packed fully with sterilized gauze, but not tightly. The further dressing is of sterilized absorbent material.

At the next dressing the skin about the wound is washed with ether or benzine, and the granulating wound dressed with dry sterilized gauze without irrigation. In most cases a dry dressing is sufficient; in some, however, a moist dressing does better; the moistening should be done with salt-solution. The author has not seen decomposition in the wound-secretion in a dressing that remained on for eight days. Free drainage with plenty of sterile absorbent dressing is all that is requisite. The course of the healing is very good. The amount of secretion is small. The dressing is renewed every eighth day.

THE TREATMENT OF STAB-WOUNDS OF THE THORAX.

HUGET and PÉRAIRE (*Rev. de Chir.*, January, 1895) consider that these wounds should be dressed when possible before the patient is moved any distance, since jarring favors hæmoptysis and endangers life. Hypodermatic injection should be used but seldom, and only when the depression is great, as the syncope favors hæmostasis. Caffeine and artificial serum hypodermically injected are to be preferred. Ordinary measures, such as the external application of cold and iced drinks, injections of ergotine, compressive dressings, antisepsis, and the ligation of bleeding vessels, are in many cases insufficient, if the patient is not immediately placed at rest. This method, of course, does not preclude antiseptic methods, but all manipulations must be made with the utmost gentleness. In case of hæmothorax expectant treatment is the best, and in this case "armed expectation" is most appropriate. Thoracentesis should not be determined upon without great deliberation, and not until drainage is insufficient and symptoms of dyspnœa are marked. Unnecessary toilet of the patient should be avoided.

The Treatment of Bone- and Joint-tuberculosis.

Neuber (*Langenbeck's Arch.*, Band xlix. Heft 1), from a series of cases, concludes that formal resection should be superseded by removal of the diseased tissue and the use of a 10 per cent. iodoform-glycerin emulsion and a light iodoform-gauze dressing. The author declares himself opposed to the too conservative methods of treatment in tuberculous disease, and advises early operation. He also favors the use of an iodoform emulsion as a dressing in all wounds. The only drainage he employs is that produced by compressive dressings.—*Cent. für Chir.*, 1895, No. 7.

Craniectomy (Lannelongue's Operation) for Microcephalism and Idiocy.

Beck (*Prager med. Woch.*, 1894, Nos. 39–45) attempts to bring this operation again into favor. He has collected a number of cases and added to them two of his own, and formulates exact indications for the operation. The following conclusions are given:

1. Microcephalism is an agenesia of the central nervous system.
2. The changes in the skull are only results of this agenesia (deficiency in growth and early ossification).
3. Frequently there is present at the same time a lack of development in the spinal canal (micromyelia).
4. This agenesia can arise at any period of embryonal life.
5. Pathological alterations may be present at the same time.

From these conclusions it may be assumed that operative interference is without value, as it only alters a pathological condition without acting upon its source. The results, however, shown in the cases collected by this author would lead to an entirely different conclusion.—*Cent. für Chir.*, 1895, No. 10.

The Treatment of Goitre by Thyroid-diet.

The researches of Bruns (*Beiträge zur klin. Chir.*, Band xiii. Heft 1; *Cent. für Chir.*, 1895, No. 13) and others have shown that the thyroid-diet exerts a specific influence in many forms of goitre, and causes either a rapid decrease in size or their total disappearance. The exceptions are the cystic goitres, malignant goitres, and those seen in Basedow's disease; the latter are, however, influenced in a slight degree. The dose employed was ʒijss. of the fresh gland in eight days for adults and gr. lxxv. for children; larger doses produce the well-known symptoms of poisoning.

Of the sixty cases under treatment fourteen were entirely cured, twenty were relieved of troublesome symptoms, but the goitre did not entirely disappear; nine were improved, while seventeen were not affected. The result of treatment was observable after eight days. In cases where relapse occurred the troublesome symptoms, as breathlessness, did not recur. The treatment is also of great value in removing symptoms that remain after a partial thyroidectomy. In cases where the result has not been perfect the subsequent operation has been greatly facilitated by the decrease in the size of the lobules and increase in connective tissue. The good results of this treatment are observed principally in the hypertrophic forms of goitre, which tends to show that the hypertrophies are due to an increased need of the system.

A Case of Internal Choledocho-duodenostomy for an Impacted Gall-stone.

Kocher (*Corr. für Schweizer Aërzte*, April 1, 1895) reports a very interesting case of impacted gall-stone in the ductus choledochus. The gall-bladder was not large and had very little bile in it. By displacing the other intestines the duodenum was exposed, and a finger passed behind it discovered a stone the size of a pigeon's egg in the choledochus behind the duodenum. The stone was very hard, and it was impossible to crush it with the forceps. It was also impossible to break down the adhesions and displace the duodenum, and hemorrhage from the head of the pancreas which was produced in the attempt, had to be stopped by tamponing.

The only method remaining was to attack the stone through the duodenum. The middle left finger of the operator was placed behind the stone and the duodenum, lifting them up. An assistant pressed the duodenum down upon this finger from above. The anterior wall was then cut transversely across its entire width; then an incision was made longitudinally through the posterior wall and the choledochus, so that the stone could be removed. The choledochus was then sewn to the wall of the duodenum, forming a fistula between the two, and the anterior wound was closed. The external wound was tamponed and drained by two drainage-tubes, and allowed to granulate. The patient recovered completely.

The Final Results in Radical Operations for Reducible Herniæ.

Beresowsky (*Deut. Zeitschr. für Chir.*, 1895, Band xxxix. Hefte 3 und 4), after studying the various methods and describing the one he now favors, concludes his valuable study with the following summary:

1. The indications for operation which during the past year (1892–93) have been held in the Berne Clinic, are confirmed by the last 220 operations. The wish of the patient may be considered a sufficient indication, since the mortality is *nil* and the percentage of relapses is very slight.

2. The size and the age of the herniæ have an influence on the period of recovery, and in most cases with regard also to recurrence.

3. The age of the patient—*i. e.*, the laxness of the abdominal walls—influences in no manner the result of the operation or the rapidity of the healing; it has a slightly greater influence upon the prognosis as regard recurrence.

In case of operation for inguinal hernia under the above conditions a relapse of the original hernia is not so frequently observed as a return in some other locality which has no relation to the former area, and is apparently due entirely to the relaxation of the abdominal parietes.

4. Thanks to the good course of the operation and wounds, the operation for oblique inguinal hernia can be performed upon children at an early age.

5. The best method for performing the radical cure for oblique inguinal hernia, the author considers, is the last manifestation of Kocher's method, since, in the first place, it produces not less certain results, as far as recurrence is concerned, than the already known best methods (Macewen, Bassini); and, secondly, since this method, on account of the simplicity of its technique and the harmlessness to the patient, if there should be any accident in the process of healing, has decided advantages.

6. In order to prevent recurrences it is very necessary during the operation to observe the condition of the spermatic veins, and in case a varicocele is ever produced it should be operated upon as speedily and thoroughly as possible.

7. The wearing of a truss after a properly performed operation, followed by primary union, is entirely unnecessary, since the majority of the patients, laborers, sent out from the clinic remain free from relapse without wearing any form of truss or protection over the wound.

THE RADICAL CURE OF UMBILICAL HERNIA.

TILLAUX (*La Seur. Méd.*, March 9, 1895) describes a modification devised by his assistant, Dauriac. The method consists in making two longitudinal incisions in the recti muscles in the middle third of their length, dividing them into two bands. The internal bands, including the anterior portion of their sheaths, are divided transversely at their superior extremities, while the two external portions remain to preserve the continuity of the recti. After their detachment the two bands are much less retracted, this permits of their being crossed over the point where the umbilical opening formerly existed. Their superior extremities are thus transposed, each uniting with the rectus of the opposite side, at the point where the other was removed.

INTESTINAL OCCLUSIONS AFTER LAPAROTOMIES.

The conclusions formulated by ADENOT (*Gaz. Hebdom. de méd. et de Chir.*, March 18, 1895), after a careful study of this subject, are of extreme value. His summary is as follows:

A certain considerable number of post-operative occlusions of the intestines are due to the physiological impermeability of the left subcostal angle of the colon.

When the small intestine is placed in a plane posterior to the angle of the colon, this angle is not compressed and its permeability is less liable to be interfered with.

Catheterism of the rectum with Faucher's tubes may succeed in some cases, whether associated with gases or fluids or not, in relieving the strictures.

The introduction of a flexible tube is not always feasible, as it may become folded up in the rectum; the rectal sound should be used with great care, so that it may not injure the mucous membrane of the rectum.

During a laparotomy it is advisable to displace any portions of the small intestine that may threaten from their position to compress the colon at this angle by its distention.

It appears preferable to purge mildly from the first to the third days after operation, to prevent the recurrence of a marked meteorism. Meteorism of itself is a cause of impermeability of the left subcostal colic angle.

If an occlusion should form after the laparotomy, one should not hesitate to reopen the abdomen. Of the causes which one should seek for the production of the occlusion, one should not forget the occlusion of the left colic angle by the causes enumerated above.

SOME OF THE INDICATIONS FOR OPERATION IN HEAD-INJURIES.

BULLARD (*Boston Med. and Surg. Journ.*, January 24, 1895), in a paper in which he discusses this subject, gives the following as rules for operating in these cases:

(1) Be sure that the opening in the cranium is sufficiently large.

(2) Always open the dura where there is evidence of intra-dural pressure.

(3) Remember that in these operations time is an important factor. Do what has to be done as rapidly as possible. In children many deaths are caused in these operations by loss of time.

(4) In an exploratory operation, where it is not certain that a large extradural clot exists, look out for the middle meningeal artery.

(5) It is perhaps scarcely necessary to mention that all cases of intra-cranial hemorrhage with which the surgeon has to deal can be stopped by pressure.

(6) I am inclined to think that the present tendency is to remove the packing from the intracranial cavity too early.

THE TREATMENT OF THE PARAPLEGIA OF POTT'S DISEASE BY LATERAL DRAINAGE.

MÉNARD (*Rev. d'Orthopédie*, March, 1895), in the course of a laminectomy for the relief of the paraplegia of this disease, observed that he did not obtain any result except in cases where there was a tuberculous abscess opened during the operation, and deduced the conclusion that it is possible that the success was not due to the opening of the spinal canal, but to the accidental opening and drainage of the tubercular abscess. The confirmation of this hypothesis was seen in the recovery of two patients upon whom he practised the direct opening and drainage of the abscess-cavity without the opening of the spinal canal. One was the case upon which an unsuccessful laminectomy had been performed previously, and the other had never been operated upon. In both cases the paraplegia commenced to disappear immediately after drainage had been established. The author reports three other cases in which the paraplegia had existed for some time, and which was relieved speedily by this drainage. The immediate results in these three cases are of great interest. A few hours after the opening of the tuberculous abscess the patients felt a sensation of greater freedom in the lower extremities. The voluntary movements began to increase in intensity from the first day. They developed progressively, until at the end of the tenth, fifteenth, and twenty-fifth days they were able to stand, and walking began to be possible. Other phenomena began gradually to assume the normal condition. The operation is performed as follows: An incision two to three inches in length is made in a transverse direction, exposing the portion of the spinal column corresponding to the angle of curvature. The transverse process of one of the vertebra is then removed subperiosteally from its attachment to the rib and torn away as deeply as possible at its vertebral attachment. The grooved director is then pushed beneath the periosteum and the lateral aspect of the vertebra explored and the abscess discovered. Pus usually shows itself as soon as the lateral process is removed, the grooved director only serving to enlarge the opening. The permanence of the results obtained is attested by the absence of the paraplegia fourteen, eleven, and ten months after the operation in the first three cases, and the persistent improvement in all cases operated upon.

Compensatory Hypertrophy of the Fibula following Osteomyelitis of the Tibia.

A remarkable case of compensatory hypertrophy of a bone is reported by Marchant (*Rev. d'Orthopédie*, March, 1895). The patient was operated upon for an osteomyelitis of an aggravated character; at that time the patient was thirteen years of age. There were multiple foci found in the thumb, clavicle, and especially in the right tibia and its articulation at the knee. The resection extended from the tuberosity of the tibia to two and one-half inches above the tibio-tarsal articulation. The periosteum was almost entirely destroyed in the upper part of this wound, and an arthrotomy of the knee was necessary. The patient was seen again six years after this operation. The leg had a curvature which had its convexity internally. The region of the knee was greatly enlarged. The middle portion of the tibia was almost entirely wanting, while the internal malleolus maintained its normal appearance. The knee was deformed by the presence on the inner side and posteriorly of the head of the fibula; the styloid apophysis of the fibula was on a line with the upper border of the patella, having been pressed there by the weight of the body and lack of development in the tibia. The foot maintained its normal relations, the hypertrophy existing in the fibula in its upper and middle thirds, where it was greatly thickened in the antero-posterior direction and on the anterior surface. There was considerable shortening, but movement remained very good to a right-angle, and walking was easy without mechanical assistance.

Antitoxin Exanthema.

Asch details a case (*Berliner klinische Wochenschrift*, 1894, No. 51) of mild diphtheria in which, on the first day of the disease, 10 c.cm. of Behring's No. 1 serum were injected. On the following day 5 c.cm. of No. 2 were injected. Two days later an urticarial eruption appeared at the points of injection on the flexor surface of the thighs. In five days the patient was out of bed, but a week later was obliged to return with fever, accelerated, small pulse, frequent and painful respiration, and somnolence. An eruption appeared on the legs, having all the characters of erythema multiforme. On the arms and face, breast and abdomen, there was a scarlatiniform rash. The patient gradually recovered.

The author thinks there is no doubt that this was a supplementary disease caused by the serum.

CARCINOMA LINGUÆ.

In treating of this most interesting subject, ANDERSON (*The Quarterly Medical Journal,* January, 1895) calls attention to the fact that precancerous conditions, which at the outset may appear benign, have grafted upon them a cancerous condition; therefore, no surgical lesion of the tongue, unless it be of a merely transitory nature, must be regarded as unimportant. In every sore of doubtful character, a portion of the diseased tissue should be excised and examined under the microscope. The piece should not be a mere fragment snipped off with the scissors; such an investigation could only mislead. Cocaine should be injected and a substautial piece of tissue, including the substance of the sore and a little margin, should be removed. The sections for examination should be cut at right-angles to the surface of the sore. If this examination does not give a clear diagnosis in either way, give the benefit of the doubt to the patient, and not to the disease: excise the peccant tissues. In case of declared carcinoma, excise without a single day of unnecessary delay. The chief objects aimed at by the surgeon in operating are three: to prevent hemorrhage, to prevent the entrance of blood and septic matters from the mouth into the air-passages, and to extirpate the growth as completely as possible. Excision of the growth may best be undertaken in all but exceptional cases, after ligation of the lingual artery (on one or both sides) at its origin. This is accomplished by a section downward from the angle of the jaw through a point a little behind the tip of the greater cornu of the hyoid bone, which will enable the finger, after displacing the submaxillary salivary gland, to feel the pulsation of the external carotid artery, and the main vessel is exposed after ligation and division of any veins that may be in the way. The facial and lingual arteries springing from the front of the trunk, either separately or by a common stem, are to be seen, and we may tie one or both. All enlarged glands should be removed at the same time for histological examination. The tongue should be excised with scissors, leaving a wide margin of healthy tissue, especially in the direction of the floor of the mouth. The submaxillary triangle should be closely watched; and if recurrence in this situation becomes evident, or even before this evidence appears, should the examination of the glands originally excised prove that extension has taken place, the whole triangle should be cleared after ligature of the carotid artery.

CASTRATION FOR THE RELIEF OF HYPERTROPHY OF THE PROSTATE.

In a paper before the Medical Society of the State of California, BARD, of Ventura, after discussing briefly the theory upon which this operation is based, gives to Professor White the credit of first suggesting that as oöphorectomy usually results in decrease of uterine fibroids, so castration in man would probably be followed by atrophy of an enlarged prostate gland. The arguments upon which this suggestion was based, and the experiments on dogs, which confirmed the theoretical conclusions reached by Dr. White, were published originally in the *Annals of Surgery* for August, 1893. These have been abstracted and quoted so frequently in the medical press, both at home and abroad, that the subject must now be familiar to all who keep in touch with current medical literature.

The author reported a case with marked hypertrophy of the prostate of several years' standing, accompanied by the usual train of symptoms. Double castration was followed by prompt amelioration of the distressing symptoms.

The statement that no physical effects occur after castration, after puberty and in middle life, is certainly borne out by the experience of a large number of careful operators.

A Study in Technique of Operation upon the Appendix.

Dawbarn describes in the *International Journal of Surgery*, 1895, vol. viii. No. 8, the following method of dealing with the stump after removal of the appendix, which he has employed since 1890 in all suitable cases:

1. A continuous Lembert suture of silk is made to surround the appendix, running like a purse-string or gathering-string, in the superficial layers of the cæcum, one-fourth inch from the appendix. This suture is not yet tightened, although the first half of a surgeon's knot is already made.
2. The appendix is divided, leaving a stump of variable length, but never shorter than a half-inch.
3. This stump is stretched for a moment gently by introducing through its calibre a closed pair of slender, mouse-toothed forceps, passing them into the cæcum, and gently opening the blades; thereby any stricture from swelling of mucous membrane or from plastic deposit will be stretched, and the next step will be the easier in consequence.
4. The stump is seized at the extreme of its free end by a similar fine-pointed pair of mouse-toothed forceps, and the stump is promptly invaginated —turned "outside in"—as a glove finger might be. So that when completed the forceps and appendix-end are one-half inch *inside* the cæcum.
5. The suture is now tightened, during which step the forceps are withdrawn. Sometimes it is a help to insert a probe or grooved director between the open jaws of the forceps prior to withdrawing the latter, in order to prevent the appendix drawing itself out again with them.

Two points in the technique should be noted: the use of dry sterile gauze to hold the viscera, to prevent slipping, and pressure of the thumb and finger upon the cæcum near the appendicular attachment to prevent the escape of fecal contents during the manipulations.

On the Treatment of Secondary Hemorrhage from the Arteries of the Upper Extremity.

Platt describes four cases of secondary hemorrhage of the upper extremity in the *Medical Chronicle*, vol. iii., No. 2, which he uses as a text for some remarks upon the treatment of this accident. Two of the cases presented clean wounds—one involving the ulnar artery and the other the superficial palmar arch—both had been inflicted some days previously. It was quite easy to ligate both ends of the divided vessel by slightly enlarging the wound. Healing was rapid and satisfactory, and there was no further trouble.

The third and fourth cases are of special interest, as both wounds were sloughing. In one a suppurating adenitis, secondary to an infected wound of the thumb, eroded a small branch of the brachial artery near the main trunk, and in the other a punctured wound involving the radial artery had been packed so tightly that sloughing occurred. In the former, as it was impossible to ligate the injured vessel on account of the close proximity of the wound to the brachial artery, the latter was ligated with silk above and below the origin of the branch involved. The hemorrhage recurred, however, and depended upon the ligatures becoming septic and cutting through the vessel and coming away before the wound had healed. The author decided to trace the divided artery up and down until its walls were found healthy and to apply torsion. In the fourth case, after completely dividing the wounded artery, both ends were twisted. Both cases made an uninterrupted recovery. The author strongly advises the treatment applied in the last two patients in similar cases. He prefers torsion to ligature, which leaves a foreigh body in the wound.

EXTRA-PERITONEAL CLOSURE OF ARTIFICIAL ANUS AND FECAL FISTULA.

J. GREIG SMITH describes in the *Bristol Medico-Chirurgical Journal*, vol. xiii., No. 47, the method which he has successfully employed in closing cases of artificial anus and fecal fistula. The object sought is to perform enterorrhaphy without opening the general peritoneal cavity. The author thinks too much has been made of the agglutination of peritoneal surfaces in abdominal surgery. It is by no means certain, he says, that two opposed surfaces of intact peritoneum unite as quickly as two surfaces denuded of peritoneum, and he insists that an opening in the gut can be closed as satisfactorily and as speedily by the apposition of rough cicatricial tissue on its surface as by the apposition of intact peritoneum.

Between the parietal peritoneum and any discharging intestinal openin is a circle of adhesions binding the bowel to the parietes. In the operation to be described these adhesions are left undisturbed. The bowel is delivered through an incision carried above and below the parietal opening, along with parietal peritoneum, which is separated from the parietes to any desired extent. The chief feature in the operation is this separation of parietal peritoneum, with its fat all around the fistula, for a distance of one or two inches, as is found necessary. The detachment should be begun at a distance from the fistula and carried down to it; it may be done almost entirely with the fingers.

In a case of fecal fistula the bowel does not protrude through the parietal opening, and there is no spur, or only a slight one. A simple fistula leads from the skin to the bowel. The first step in the operation is the scraping of the granulations lining the fistula, which is done with a sharp Volkmann's spoon. If there is any discharge from the intestine,a small sponge with a string attached is pushed through the fistula so as to block it. An incision is then made in the direction of the underlying muscular fibres, with the fistula in the centre; the incision does not pass through the fistula, but is carried around it. The fistula, with the cicatricial tissue surrounding it, is removed bodily. The parietal peritoneum, with its areolar tissue, is separated with the finger for a distance of one or two inches all around. When the separation is complete the fistulous tract is removed down to the gut. The bowel is now lifted out of the parietal incision by means of forceps, and the opening closed by infolding the raw surfaces and uniting with Lembert's sutures. This is followed by a continuous (Dupuytren's) suture. The parietal wound is then closed. A small drainage-tube laid over the line of gut sutures adds to the security of the operation by preventing burrowing.

In cases of artificial anus there is almost always a spur present, in which case it is necessary to devote a few days to removing this condition. For this purpose the method adopted by Mitchel Banks is recommended. This consists in introducing a piece of rubber-tubing of proper size in the bowel, by being put upon the stretch during its introduction one of large calibre may be employed; it is anchored by a piece of aluminum wire which passes into, but not through, the wall of the tube. In a few days the spur will have been removed and the lower segment of the bowel will have been dilated, and the tube may then be withdrawn. Two days may be allowed for the irritation caused by the tube to subside before the final step in the operation is performed. The incisions are made as already described for fecal fistula, and the succeeding steps are also carried out in the same manner. Free detachment of the parietal peritoneum, with accurate suturing of the bowel, is the most important element of success.

Stone in the Bladder.

In a recent clinical lecture, HEATH (*Brit. Med. Journ.*, June 1, 1895) says that "If you have these symptoms—increased frequency of micturition, pain after emptying the bladder, pain at the end of the penis, and occasional passage of blood—you will conclude that the patient has a stone, and you will be quite justified in sounding that patient; and you will have no difficulty in touching the stone if it is anything of a size. In case a stone is not found, the patient should be sounded on a second occasion under chloroform or an anæsthetic. In cases of enlarged prostate the surgeon may not push the sound completely into the bladder. He uses the sound in the usual fashion, rotating it in the prostatic urethra, and may easily fancy that there is no stone present; but if he pushed the sound well up into the bladder, he would find the stone. You should make sure, therefore, that you have pushed the sound well up into the bladder, and directly the sound has entered turn it down and explore behind the prostate. Then comes the question, Shall you or shall you not have some water in the bladder? Well, you ought to have some, and I take it that whatever is in the bladder at the time will probably be enough; but if you fail to detect the stone, there may be more water than you want, so it is convenient to use a hollow sound to enable you to draw the water off, and as you do so you may feel the stone click against the sound."

In doing the suprapubic operation the author did not use the Peterson bag to distend the rectum and used air to distend the bladder. It was the first time he had done so, but he considers it a good plan. The method was suggested by Bristow. Having washed out the bladder he filled it with air, leaving the catheter *in situ* to assist in raising the apex of the bladder if it was desirable. "Having felt that the bladder was fairly well distended, I made an incision immediately above and on the pubes, about two and a half inches in length. I then worked in carefully between the muscles, and, having exposed the fat and cellular tissue, I came on the bladder with my finger, and then in order to keep it within reach I passed two threads with a curved needle, one on each side, to hold the bladder in position ; next I scraped a little on the muscular fibres of the bladder, taking care to avoid some veins. I was then able to open the bladder in the middle line without any difficulty, and the air immediately escaped. There is this advantage of the air over water distention, that the air escapes easily and there is no mess. There is also another consideration, if there is a sudden rush of water it may wash out with it a small calculus, which may get lost." The author also insisted upon the necessity of sounding under an anæsthetic just before operating. In the after-treatment he uses a flanged rubber tube, fastening a sheet of oiled silk beneath the flange and attaching it to the pubes with plaster. In regard to methods, he says: The suprapubic method seems so thoroughly to have established itself among surgeons that one may reasonably look forward to its being the operation in the future.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

J. SOLIS-COHEN, M.D.,

OF PHILADELPHIA.

The Rhino-pharynx and the Lachrymal Passages.

In the *Ophthalmic Record*, 1895, No. 9, Dr. C. A. Veasey calls attention to the importance of active treatment of the rhino-pharynx in the treatment of obstructive disease of the lachrymal passages, and illustrates his remarks by five cases, as follows:

Case I. Purulent dacryo-cystitis; hypertrophy of right lower turbinated bone.

Case II. Purulent dacryo-cystitis; hypertrophy of inferior turbinated bone on both sides, with a spur of the septum on the right.

Case III. Catarrhal dacryo-cystitis; hypertrophic rhinitis, with deviation of the septum to the left.

Case IV. Epiphora; polypus; hypertrophy of right inferior turbinate.

Case V. Lachrymal abscess; syphilitic ulceration of septum; marks of former ulceration in pharynx.

An Extraordinary Case of Syphilis of the Tonsils.

Dr. J. Sendziak, of Warsaw, reports (*Revue de Laryngologie, d'Otologie et de Rhinologie*, 1895, No. 9) the case. For several weeks this case had been considered to be a case of diphtheria, then it was thought that perhaps it might be an example of fibrinous angina or of a new form of mycosis, and finally it was mistaken for sarcoma. After a prolonged continuance the antisyphilitic test was applied in treatment, with the result of promptly clearing up the diagnosis in the cure of the case. Three weeks after the commencement of the disease the right tonsil was enlarged in its vertical diameter to such an extent as considerably to occlude the isthmus of the throat. It was entirely covered with a white membrane, slightly bluish, thick and lardaceous, and incapable of separation from the parenchyma of the tonsil. The total aspect was that of a tonsil which had been entirely covered with the products of a topical application of silver nitrate in substance.

In concluding his report, the writer cites a case of supposed cancer of the larynx sent to Wiesbaden for laryngectomy, in which specific treatment suggested by Dr. B. Fraenkel completely cured a syphilitic laryngitis.

ATROPHIC RHINITIS.

DR. JOSEPH GIBB (*Medical News*, December 8, 1894) calls attention to the value of zinc stearate in the treatment of atrophic rhinitis, and details the plan pursued by him in the Episcopal Hospital of Philadelphia.

ABSCESS OF THE NASAL SEPTUM.

DR. JOSEPH S. GIBB (*Codex Medicus Philadelphiæ*, February, 1895) reports two cases of septal abscess, one acute and the other chronic, in which some injury was believed to be the exciting cause, although there was no such history. These are the only two cases seen at the Episcopal Hospital out of 2000 cases of nasal disease.

CLOSURE OF A LARYNGEAL FISTULA.

DR. CLAYTON PARKHILL, of Denver, Colorado, reports (*International Medical Magazine*, February, 1895) a case of closure of the laryngeal fistula by turning up the flap below, skin inward, in a male subject who had attempted suicide with a razor.

This method of closure, though one of the best, is not, however, new, a number being on record; one by the writer of these notes, reported in *The Medical News*, December 9, 1893.

In hairy subjects, however, this method is not desirable for obvious reasons.

FORCED DILATATION OF THE LARYNX. INTUBATION.

DR. LOUIS BORS advocates (*New York Medical Journal*, 1895, No. 26) forced dilatation of the larynx with a hinged intubation-tube for diphtheritic or croupous laryngitis. He asserts that the manipulation is harmless and painless, and requires only a few minutes in the manipulation. By this method he proposes to supersede the continuous presence of the intubation-tube. While he does not record any cases in detail, he claims these good results in a general way.

The difficulty experienced in removing the tubes of intubation has prompted a number of devices for the purpose. One of the most recent is described and illustrated by DR. DILLON-BROWN (*Medical News*, July 6, 1895). This consists practically of a hook attached to a skeleton thimble for the forefinger. The hook catches in a metallic loop which surmounts the intubation-tube and thus pulls it readily away.

A still simpler suggestion is made by DR. RAOUL BAYEUX, an interne á l'hôpital Trousseau (*La Mêdecine Moderne*, 1895, No. 42), who shortens O'Dwyer's tube by cutting off the entire sub-ventricular portion. He is then able to remove it with his finger. He claims that the tube is quite as firm as a long one, and that it is much less likely to become obstructed with false membrane or to become encrusted exteriorly.

STRIDULOUS LARYNGITIS AND DIPHTHERIA.

DR. BONAIN, of Brest (*Revue de Laryngologie, d'Otologie et de Rhinologie*, 1895, No. 9), reports two cases in which unsuspected diphtheria seems to have been the cause of stridulous laryngitis. In two patients, aged two and six years, respectively, attacked with laryngitis, the doctor was unable to detect any evidence of pelliculation. Nevertheless, he removed some of the mucus for culture-purposes and was astonished to find the diphtheria bacillus. Both patients were treated with injections of antidiphtheritic serum and recovered promptly.

The author suggests that stridulous laryngitis may not always be simply a nervous affection, and that it may be caused by the irritation due to the presence of unsuspected diphtheria bacilli, and he therefore recommends that similar culture-investigations be taken in these cases as in suspected diphtheria.

LARYNGEAL PARALYSIS AND TYPHOID FEVER.

DR. W. LUBLINSKI, of Berlin, reports (*Annales des Mal. de l'Oreille du Larynx*, etc., 1895, No. 4) five cases, four of them in males. Paralysis of the dilators occurred in one case, paralysis of one recurrent nerve in three cases, and paralysis of both recurrents in one case. Of the three cases of paralysis of the recurrent, one was first a paralysis of the right abductor and then of the recurrent in its totality, and two of them were paralysis of the left recurrent. One of these latter was accompanied with a slight paralysis of the lower limbs, and occurred during the febrile period of the disease. The other four occurred after defervescence.

MALIGNANT GROWTHS OF THE LARYNX.

In the *New York Medical Journal* of November 10, 1894, DR. ARTHUR AMES BLISS reports a case of epithelioma and one of sarcoma of the larynx; the former in a printer, forty-six years of age, and the latter in a laborer, fifty-five years of age, accompanied with a good photographic illustration of a specimen secured at the autopsy.

In both instances life was prolonged by tracheotomy, the more radical procedure having been declined, although the conditions in both instances seemed to be favorable for partial laryngectomy.

The case of epithelioma died suddenly from heart-failure in an attack of angina pectoris about four weeks after operation, and the case of sarcoma succumbed from exhaustion a year after the operation.

OBSTETRICS.

UNDER THE CHARGE OF
EDWARD P. DAVIS, A.M., M.D.,
PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC;
CLINICAL PROFESSOR OF OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE; CLINICAL
PROFESSOR OF DISEASES OF CHILDREN IN THE WOMAN'S MEDICAL COLLEGE;
VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.;

ASSISTED BY
WILLIAM H. WELLS, M.D.,
INSTRUCTOR IN OBSTETRICS IN THE PHILADELPHIA POLYCLINIC.

A DELIVERY-STOOL IN USE AT THE PRESENT TIME IN SPAIN.

In the *Edinburgh Medical Journal*, page 771, 1895, SIMPSON describes a vessel made of strong, glazed earthenware, having a gap or opening in the anterior wall, and used at the present time by the physicians in Spain in confinement-cases. This jar or stool has a wide flange upon which a patient sits, leaning forward, while the gap in the anterior wall of the jar permits necessary examinations and the expulsion of the child. Amniotic liquid and blood escape into the jar. Simpson commends this delivery-stool for its simplicity, and for the fact that it permits absolute cleanliness.

COMPLETE INVERSION OF THE PARTURIENT UTERUS.

In the *Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxxi, Heft 2, BECKMANN reports the case of a primipara, aged twenty-three years, who bore a child in normal labor in very rapid spontaneous delivery. The umbilical cord was coiled once around the neck, passing under the axilla. Immediately after the birth of the child the patient felt well, but had no further pains. Half an hour after the expulsion of the child strong pains began suddenly, accompanied by bearing-down efforts. A stream of blood was suddenly ejected from the vulva. After a few strong bearing-down pains the bleeding ceased, and also the uterine contractions. The midwife in attendance was terrified at the hemorrhage, and sent immediately for Beckmann; he found the patient in shock, and on endeavoring to palpate the uterus could not find it. Vaginal examination showed a complete inversion, with the placenta partially adherent. This was immediately removed, and an endeavor made to dilate the contraction-ring and replace the uterus. This effort failed, when a hot douche with 2 per cent. carbolic acid was employed freely to act as a stimulant. A second attempt without anæsthesia was successful, the uterus suddenly inverting under the pressure of the hand. It was again douched with hot carbolic acid solution, and a thorough examination revealed the pelvic organs uninjured. The condition of shock was treated by injections of camphor and ether, and by rectal injections, every three hours, of normal saline solution. The patient was given champagne frequently, and other stimulants were used hypodermatically. A complete recovery ensued. A thorough examination of the case showed that the midwife had neither pulled upon the cord nor had she attempted to express the placenta by Créde's method.

Beckmann has collected one hundred cases and studied the mode in which the accident happened. He concludes from his studies that most cases happen without interference or manipulation on the part of the midwife or physician attending the case. Most cases occur in patients between the ages of twenty and thirty years, when strong and vigorous expulsive efforts are likely to occur. He believes that vigorous spontaneous expulsion of the child is the chief cause for this accident.

THE TREATMENT OF LABOR WHEN THE POSTERIOR PARIETAL BONE PRESENTS.

Under this title GOENNER (*Zeitschrift für Geburtshülfe und Gynäkologie,* Band xxxi. Heft 2) reports eight cases, seven of which occurred in contracted pelves, two simple flat pelves, three flat rhachitic, and one symmetrically contracted. Three of the children survived, and all of the mothers. In one case the uterus was ruptured and abdominal section performed. In one case the mother delivered herself after the position of the head was rectified by the introduction of the hand. One case was delivered by forceps, which corrected the position of the head. In the remaining cases it was necessary to turn, to use forceps, and in several to perforate to deliver the child. The favorable results for the mother indicate that the prognosis in these cases is good if operation is promptly undertaken.

THE HEIGHT OF THE FUNDUS UTERI AT VARIOUS STAGES OF LABOR.

FOTHERGILL has measured the distance from the fundus uteri to the upper margin of the pubic joint during the first stage of labor and during the second stage. He also measured the breadth of the uterus in different stages and its length. His results showed that the fundus rises three-tenths of an inch before birth ; the uterus becomes narrowed laterally one and one-tenth inches before labor ends, while the measurement from the fundus to the pubes lessens one inch before birth. The length of the parturient canal is not shortened before delivery ; as the child passes through the uterus into the vagina the womb grows narrow, while as labor advances the uterus is contracted antero-posteriorly. The cubic contents of the uterus are lessened. The fundus does not sink before the birth of the head.—*Edinburgh Medical Journal,* June, 1895.

HYSTERIA AND DEMENTIA IN PREGNANCY, WITH FŒTAL CONTRACTURES.

BARBOUR (*Ibid.*) reports the case of a woman, aged twenty years, unmarried, who was well during pregnancy until fœtal movements developed, and she was subjected to mental shock because of her condition. She was then seized with attacks of hysterical paralysis, which produced a condition closely resembling dementia. Muscular contractures with areas of anæsthesia developed. Labor came on spontaneously, with epileptiform spasms with each pain, fever, and rapid pulse. The fœtus died during labor. The pulse failed and delivery was completed by forceps. From the moment when the membranes ruptured the temperature declined, becoming normal. Paralysis disappeared, but impairment of sensation and contractures remained. Temporary improvement followed labor, with return of sleep and appetite. The patient, however, failed and died with high temperature.

Post-mortem examination showed thickening of the membranes of the brain, with softening on the right side, involving the internal capsule and extending to the base.

The body of the fœtus showed the same contractures which the mother exhibited, including a peculiar attitude of the right arm and hand. This was not due to *rigor mortis*, but was proved by dissection to be due to muscular contraction.

DYSTOCIA FOLLOWING HYSTEROPEXY; DELIVERY BY CÆSAREAN SECTION.

In *La Semaine Médicale*, 1895, No. 29, **Goubaroff** reports an interesting case of Cæsarean section in the Dorpat Clinic, made necessary by previous anterior suspension of the uterus. Four years previously the patient had been treated for retroversion and retroflexion by anterior suspension. Upon examination the pregnant uterus was so firmly adherent to the abdominal wall that rupture of the uterus was feared if spontaneous labor was permitted. On opening the abdomen the uterus was found adherent by a solid band, extending longitudinally, the width of a finger. At the fundus was found a solid bridle which required clamping and division. To avoid further adhesions the uterus was incised, the fœtus extracted, and the edges of the uterine wound sutured, leaving no raw surfaces.

THE TREATMENT OF FŒTAL IMPACTION BY CLEIDOTOMY.

Phanomenoff draws attention to the difficulty of delivering large children by reason of impaction of the shoulders. When he has failed to deliver by rotating the shoulders into an oblique diameter of the pelvis, he has had good success by cutting both clavicles with blunt-pointed scissors. He describes a case of symmetrically contracted pelvis in which he delivered a child weighing thirteen pounds by this method. The left hand is introduced as a guide, and each clavicle severed at its inner end. The scissors are blunt-pointed and curved at an angle.—*Centralblatt für Gynäkalogie*, 1895, No. 22.

SCHULTZE'S METHOD OF RESUSCITATION IN CASES OF FRACTURED CLAVICLE.

Beuttner reports (*Centralblatt für Gynäkologie*, 1895, No. 22) a case of difficult extraction in breech-presentation, in which the child was resuscitated by Schultze's method of swinging. It perished shortly after birth from the effects of pressure upon the head. Autopsy revealed the fact that it had a broken clavicle. Swinging, however, had not injured the pleura or lungs, nor displaced the fragments.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,

OF NEW YORK.

Ileus due to Pressure of an Ovarian Cyst.

Peters (*Centralblatt für Gynäkologie*, 1895, No. 13) reports a case of ileus due to simple pressure of an ovarian cyst. In the other twelve reported cases the obstruction was due to torsion of the pedicle. The patient, aged sixty years, had had an abdominal tumor for ten years, with symptoms of intestinal obstruction of a year's standing. The writer was called to see her on account of a sudden attack of abdominal pain. She had had no movement of the bowels for four days; two small stools followed the administration of high enemata. On examination the abdomen was found to be tympanitic, a cystic tumor as large as a man's head being detected, which filled the pelvis. There was an umbilical hernia the size of the fist, which contained omentum, but no intestine. General abdominal pain and tenderness; pulse small and rapid; temperature normal; nausea without vomiting. The diagnosis of ovarian tumor with torsion of the pedicle was made, but on opening the abdomen the obstruction was found to be due to direct pressure of an adherent papillomatous cyst upon the cæcum. The patient had a spontaneous evacuation of the bowels two hours after the operation, and made a good recovery.

Supplementary Ovary.

Ruppolt (*Archiv für Gynäkologie*, 1895, No. 14) describes a case of third ovary in a patient who was operated upon for the removal of a small tumor behind the uterus, which caused marked intestinal symptoms. On the right side there was found a dermoid cyst the size of an apple, and nearer to the uterus an atrophied ovary. The presence of ovarian tissue was demonstrated microscopically in both the ovary and the tumor. The presence of old omental adhesions between the two, dividing the tube, would seem to show in this case, as in other similar ones which have been reported, that there is an actual division of both the ovary and tube as the result of peritonitis in the fœtus.

Abdominal Hysterectomy with Clamps.

Richelot (*Annales de Gynécologie et d'Obstétrique*, May, 1895) infers that one of the principal reasons why total extirpation of the uterus is not more generally adopted in preference to amputation is that the technique of the former operation has been too complicated. He rejects ligatures entirely, using forceps as in vaginal hysterectomy. His technique is as follows: The only instruments needed are a knife, a few pairs of hæmostatic forceps, large and small, and two curved Richelot's clamps, sufficiently long to grasp the entire broad ligament. The operator, standing between the patient's legs, makes the abdominal incision, and lifts the uterus out of the wound. An anterior peritoneal flap is made and the bladder is freed in the usual manner. The index and middle fingers of the left hand are introduced into the vagina as a guide, and the anterior fornix is opened. The cervix is separated from below as high as the bases of the broad ligaments, which are then included, each in a single clamp, introduced from the vagina, the thumb and index finger of the left hand serving as a guide. It then remains simply to divide the uterine attachments of the ligaments and the remainder of the posterior cul-de-sac. Bleeding points are grasped with long hæmostatic forceps from the vaginal side, and a simple gauze tampon is introduced and carried through into the vagina, the abdominal wound being closed. This operation can be completed in half an hour, and doubtless in less time. The writer has performed three by this method, the patients making a good recovery.

[We are not convinced, even by the writer's well-known success with clamps, that his method of removing the fibroid uterus *in toto* by the abdominal route is a more surgical or more successful one than that in which the arteries are ligated and the peritoneal flaps are sutured, thus rendering all the stumps extra-peritoneal and avoiding the necessity of even vaginal drainage.—H. C. C.]

THE TECHNIQUE OF CURETTAGE.

LÖHLEIN (*Centralblatt für Gynäkologie*, 1895, No. 14), in comparing the relative advantages of the sharp spoon and curette, says that while the latter is the safer instrument, with the former one can scrape away the mucosa of the fundus, especially at the cornua, more thoroughly. The cutting-edge of the curette glides over the fundal mucous membrane at such a sharp angle that only the superficial epithelium is removed as a rule. The spoon is also preferable in removing intraparietal carcinoma of the cervical canal.

ACCIDENTS DURING CURETTAGE.

PICHEVIN (*Annales de Gyn. et d'Obstêtrique*, May, 1895) has collected all the cases of injury to the uterus by the curette, and groups them as follows:

1. Abortion due to the rough use of the instrument within the gravid uterus, of which many cases are on record.

2. Septic infection, which has not infrequently resulted fatally in pre-aseptic days.

3. Rupture of a pyosalpinx, as in a fatal case reported by Rochet. In the event of such an accident, vaginal hysterectomy or cœliotomy should be performed without delay.

4. Atresia of the uteri after curettage has been noted by Polaillon and Fritsch, but is rare.

5. Perforation is the most frequent accident, a case being reported by Richard as early as 1854, who, as well as Nélaton, called attention to the fact that it is often unattended by serious results. The same observation has been made by many subsequent writers.

As regards the causes of perforation, the writer finds that softening of the uterine wall following pregnancy is the most common, perforation of the non-puerperal uterus during curettage being quite rare. Frequent child-bearing, tuberculosis, and possibly cardiac disease seem to cause certain degenerative changes in the muscular tissue. If the softened uterus is retroflexed and fixed by adhesions, there is especial liability to the accident. Olshausen affirms that it is impossible to foresee and prevent it, an opinion shared by Ozenne, who demonstrated in a non-puerperal uterus a localized area in which the wall was extremely thin.

The seat of the puncture varies, being most apt to occur at the angle of flexion when the uterus is retroflexed and adherent. The most common point is at the cornua, in the neighborhood of the tubal orifices, where the wall is thinnest; as Léfour has shown, inflammatory lesions are most marked in this region. Doubtless the operator has often been at fault through carelessness, inexperience, or undue roughness. In some cases the perforation has been made with a steel dilator, and not with the curette at all.

The diagnosis of the lesion is sometimes made at the time, the operator feeling his curette suddenly slip through the uterine wall, while its extremity is clearly felt by abdominal palpation. Still one may be in error in inferring that he has caused a perforation when the curette suddenly slips into the fundus of a uterus which is deeper than was supposed. It has been explained that the uterus may become suddenly distended during curettage, due to a temporary paralysis of its muscle. The cautious use of the sound under these circumstances will demonstrate the fact that the organ is uniformly dilated. Under bimanual pressure it may be made to contract. Exceptionally the curette may enter the dilated proximal end of the tube, but most of the reported cases are hypothetical. Probably the instrument really slips into one cornu, which is more developed than the other. There is, of course, no doubt as to the occurrence of the accident when omentum or intestine appears at the os externum, as has been reported in several instances. In some cases the perforation was not suspected until fluid was injected into the uterus and failed to return. It seems more rational to infer that the fluid entered the peritoneal cavity by this route than through an abnormally patent tube.

Symptoms may be entirely absent in an aseptic operation. In other cases there may be a chill, rise of temperature, and moderate abdominal pain, without other phenomena. Sometimes, however, a localized peritonitis follows, which may become diffuse, especially in cases of suppurative disease of the adnexa. Slight hernia of the omentum usually gives rise to no symptoms, but if a loop of intestine prolapses through the uterine wound subsequent symptoms of obstruction develop. If the gut is severely injured during the operation, collapse may occur promptly, with a rapidly fatal issue, as in Martin's case. The escape of antiseptic fluids into the peritoneal cavity is attended with various phenomena—colic, chills and fever, and subsequent toxic or septic symptoms.

Certain precautions are necessary in order to avoid the accident. Thorough dilatation of the cervix is advisable before curettage, and two-branched dilators are preferable to any other instruments. The curette is to be used gently, the operator beginning at the fundus and scraping from above downward, parallel with the vertical axis of the canal. The straight curette is dangerous, especially when used in the cornua. Especial care is to be exercised in curetting the uterus after early abortions, and the sharp instrument should never be used in puerperal cases. The injection of iodine or perchloride of iron after curettage is reprehensible as well as unnecessary. Irrigation, preferably with sterilized water, should be practised under moderate pressure, sufficient dilatation of the cervix being maintained to allow a free return-flow.

If a perforation is caused, it is sufficient in the majority of cases to tampon the uterine cavity simply with gauze. Prolapsed omentum should be replaced if possible, or, this failing, the prolapsed portion may be excised. But in the case of a septic uterus it is better to open the abdomen, to excise the omentum, and to suture the uterine wound. The same general rules apply to prolapsed intestine. It may be necessary to resect the gut if it is extensively injured. Extirpation of the uterus is a dangerous operation, especially in the puerperal state. It may be performed under special indications, as when the wall is perforated in enucleating a fibroma. If fluid has been injected into the peritoneal cavity through the perforation, an incision into Douglas's pouch and drainage are indicated in the author's opinion, although vaginal hysterectomy has been advised and performed.

THE SUPPOSED INFLUENCE OF TROPICAL CLIMATE ON MENSTRUATION.

JOUBERT (*Indian Medical Gazette*, April, 1895) from a careful study of this subject, based upon over three thousand patients between the ages of ten and nineteen years, arrives at the conclusion that the reason why girls in tropical countries menstruate at a relatively earlier age than Europeans is not the influence of the climate, but of too early sexual excitement.

REMOVAL OF THE UTERINE APPENDAGES FOR NERVOUS DISEASES.

BAKER (*Ibid.*) concludes a recent paper on this subject with the following summary: 1. Disease of the adnexa is sometimes an unrecognized cause of nervous disease. 2. Nervous manifestations may be due to the adhesions resulting from a former localized perimetritis which impairs the functional activity of the adjacent pelvic organs. 3. The nervous symptoms may be out of proportion to the actual local trouble. 4. A thorough examination under anæsthesia should be made in every obscure case. 5. It may be necessary to remove healthy adnexa in order to cure certain extreme nervous disturbances.

The discussion of this paper turned mainly upon the question of the removal of normal ovaries and tubes, to which the consensus of opinion was decidedly opposed, Knapp and Prince taking the ground that the successful results sometimes noted after these operations were due either to suggestion or to some profound effect on the general nervous system which might have followed any other surgical procedure.

PÆDIATRICS.

UNDER THE CHARGE OF

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ASSISTED BY

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HEMORRHAGIC DIPHTHERIA.

H. AUSTEN and H. COGILL (*British Medical Journal*, March 30, 1895) give the notes of fifty-eight cases of hemorrhagic diphtheria occurring in a series of 880 diphtheria cases at the Western Fever Hospital, London, during 1893–94. Recovery occurred in one case, and in this the diagnosis was doubtful, being based on three ecchymoses of possible traumatic origin. In eleven cases the diagnosis was confirmed bacteriologically, six of these cases being of mixed infection. In the other cases the diagnosis rested upon clinical grounds. The fifty-eight cases were about equally divided as regards sex; as to age, twenty-four were under five years, and twenty-seven were from five to ten years. The local symptoms were severe, and the parts affected usually became the seat of hemorrhage. The tonsils and soft palate showed membrane in all cases, the larynx being involved in eighteen, the nose in three, the tongue in two, and the nose and larynx in two. The cutaneous hemorrhages were of two well-marked varieties—ecchymoses and purpuric spots, with occasional intermediate types. Hemorrhages from the mucous membranes were generally severe, epistaxis occurring in eighteen cases, hematemesis in ten, and melæna in two. The usual clinical course was that of a marked toxemia, with subnormal temperature rather than fever, vomiting, weakness of the heart, and a tendency to anuria. In almost every case post-mortem examination revealed internal hemorrhages, affecting most frequently the serous surfaces, but occurring also in the mucous membranes of the stomach and intestines. They were of frequent occurrence in the muscles, and when superficially seated were the cause of ecchymoses noted during life.

The treatment was that usually adopted, and, in addition, twelve received the antitoxin, including the one recovery. Six of these were moribund on admission. In three of the other six temporary improvement followed the injections; and in these the membrane disappeared entirely before death.

Hemorrhagic diphtheria may be compared to the hemorrhagic forms of the other infectious fevers in its uniformly fatal outcome. In diphtheria, however, the disease being primarily local and general manifestations secondary, it is not surprising that the course is more prolonged. Oertel has described degenerative changes in the bloodvessels, and these may determine the seat of hemorrhage.

An Epidemic of Mumps.

The coincidence of an epidemic of pseudo-membranous angina and one of mumps was observed by Pailhas (*La Médecine Infantile*, No. 6, June 15, 1895) in a boarding-school for girls at Albi. Both conditions were present in some of the patients, while others had only one or the other. Endocarditis occurred in one case, which the author attributes to the mumps, the left parotid being slightly swollen and tender: it seems more than likely that this was rheumatic in origin, as fever was present, with a coated tongue and painful swelling of all the joints of the left arm. Jaccoud, however, in 1884, reported two cases of mumps with endocarditis, and thought this complication rare only through its having been overlooked. One of the anginas was accompanied on the fifth day with a general erythema followed by desquamation—possibly a case of scarlet fever. What might be called an inverted type of mumps (alternance répétée) was shown by one case, the onset of which was marked by peri-articular swelling of the ankles, giving metastasis to the submaxillary glands, and leaving these in a few days to attack the right knee. A strange phenomenon in another case was the sudden appearance of numerous varioliform vesicles, associated with a dry cough and abdominal distention, these giving way in two weeks to a typical explosion of mumps. A similar case was observed outside of the school, and the author mentions that such eruptions have formerly been noted in mumps. A dry cough and hoarseness were also among the features noticed in many cases. In discussing the reason for the appearance of such varied manifestations, the author raises the question whether or not the germ of influenza, an epidemic of which was raging at the time, could have a modifying influence upon the causal agent of mumps, so as to give it an irregular action.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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The Influence of Fever and Leucocytosis on the Course of the Infectious Diseases.

In the enthusiastic search for specific curative agents it is to be feared that the study of the influences which conduce to spontaneous recovery from the acute infectious diseases have been in a measure neglected. The importance of a correct knowledge of the manner in which spontaneous cure is effected cannot be overestimated, since any rational cure by artificial means to be most effective must follow in the same line. A correct understanding, then, of the natural history, so to speak, of the infectious diseases is of the greatest importance.

Of all the symptoms of the acute infectious diseases fever is the most constant, yet of the manner of its production and of its influence upon the course of these diseases we are almost wholly ignorant. At the present time the immediate practical importance of this question is very great, since so large a part of their treatment consists in combating the fever which is so constantly present. The fallacy of such treatment is apparent if in fever we have one of the salutary influences which bring about the natural recovery from these diseases.

In this connection the recent experiments of LOEWY and RICHTER (*Deutsche med. Woch.*, 1895, No. 15, p. 240) are of exceptional interest. By making use of the Sachs-Aronsohn method of puncture of the corpus striatum they were able to induce in rabbits a fever of more or less intensity and of the continued remittent type. When inoculated with virulent cultures of the germs of diphtheria, chicken-cholera, swine-plague, and pneumonia, these animals were much less affected than others similarly inoculated in which fever had not been induced. In the experiments in which one hundred times the fatal dose of chicken-cholera, diphtheria, and pneumonia were used, there was a distinctly slower progress of the disease in the febrile animals, and in the cases where only two or three times the fatal dose was administered the febrile animals recovered. In cases in which the swine-plague was inoculated into the ear-vein of rabbits the local process developed more rapidly in the febrile animals than in the control-animals, but notwithstanding this fact many of them recovered, while the control-animals all died. These results are the more significant since it is but fair to suppose that by the operation necessary to the puncture of the corpus striatum the predisposition of the animals so treated must have been increased.

In their investigation of the effect of an increased number of leucocytes upon the course of various infections in animals, Loewy and Richter induced artificial leucocytosis by means of pilocarpin, spermin, and various albumoses. Animals so treated were resistant to three and four times the fatal dose of the pneumococcus, there being only slight rise of temperature and insignificant symptoms in the cases in which the leucocytosis existed at the time of the inoculation. When the pneumococcus infection was allowed to progress for twenty-four hours before the induction of leucocytosis there was a greater mortality, though even then benefit seemed to result from its induction.

In conclusion the authors express their belief that fever and leucocytosis should be regarded as of assistance to the body in combating the effects of infection, and they suggest that therapeutic benefit may be derived rather from the use of means tending to increase these conditions than from those antagonizing them.

THE ŒDEMA OF RENAL DISEASE.

Three distinct forms of œdema are believed by SENATOR (*Berl. klin. Woch.*, 1895, No. 8, p. 165) to occur in nephritis. The first of these has a purely mechanical cause, depending upon interference with the circulation as a result of weakness of the heart-muscle. The second is observed in slow, chronic, and severe cases of nephritis, and is due to the establishment of a state of cachexia. The third variety differs essentially from these, in that it is observed very early in the course of the disease, being often the earliest symptom; shows a predilection for certain parts of the body (eyelids, scrotum, front of the legs, etc.), where it is first observed or to which it is limited; spreads rapidly, and soon, as a rule, becomes very generally distributed; and in that the affected parts have a peculiar paleness quite different from the cyanotic condition observed in œdema resulting from interference with the circulation alone.

Senator discards the theories of Bright and Grainger Stewart in explanation of this condition, inclining more to Cohnheim's view that it is due to an abnormal inflammatory condition of the small bloodvessels of the skin, in consequence of which there is an inordinate escape of the liquid ingredient of the blood. That in acute nephritis there is a peculiar predisposition to such inflammatory changes in the bloodvessels is shown by the frequency of actual inflammation as a complication in such cases, particularly of inflammation of the serous membranes.

An investigation of the various forms of acute nephritis shows this variety of œdema to occur most often in the nephritis complicating scarlatina, in that resulting from exposure to cold, in the nephritis occurring in association with malaria, and in the nephritis of pregnancy, in all of which the microscope shows a preponderant involvement of the glomeruli. This is regarded by Senator as substantiating his theory that the œdema is primarily the result of changes in the bloodvessels brought about by the action on them of the various poisons of these diseases. The glomeruli of the kidneys are very naturally among the first of the bloodvessels to be affected, both because of the high blood-pressure which exists in them, and because of the intimate contact of their endothelium with the substances which are eliminated by them. The changes in the renal glomeruli can be seen and studied, and there is no question as to their existence. To explain the œdema which is present in the same cases, Senator supposes similar changes to occur in the small vessels of the skin and other parts of the body.

The conditions in subacute and chronic nephritis in which this form of œdema occurs are similar to those existing in the acute varieties. In all there is change in the glomeruli.

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TWO CASES OF FAT-NECROSIS.[1]

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AND

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E. H., a male Swede, came to America when eight years old. His parents lived beyond seventy. His early life was spent on a farm; his latter life in a large and lucrative business. He was a stout man of the blonde type, nervous and always active. He had suffered from otitis media, the loss of the right ear-drum, and had for two years experienced the sensation of giddiness, but no tinnitus.

He tired easily, was flatulent, and slightly constipated. The pulse was frequent and poorly sustained; the cardiac impulse was obscure and felt to the left of the nipple-line. In twenty-four hours he voided 1428 c.cm. of urine, acid in reaction, containing 15.708 gm. of urea, no albumin, no sugar, and was negative microscopically.

Under the influence of massage, baths, and a regular diet continued one year, his general condition improved, and he was persuaded to take a European trip for rest. The change was enjoyed, and he reported steady improvement, although he apparently displayed as a tourist his characteristic activity. On the eve of his return he visited the canal at Manchester, and reached Liverpool chilled and exhausted. He ate heartily at dinner, but soon after was seized with vomiting, retention of urine, and abdominal tenderness and pain. Dr. W. S. Crawford, of Liverpool, catheterized him, and during the night administered 7/8 grain of morphine hypodermatically. The temperature was 100°, and the circulation feeble. The vomiting continued, with moderate pain and great thirst. The doctor writes me that he believed that the patient suffered from subacute peritonitis. Feeling slightly relieved, the home-voyage was undertaken three days after the onset of the attack. The patient grew steadily worse, vomited daily, retained absolutely no nourishment, and required morphine for the relief of pain. The ship's surgeon, Dr. S. R. Radmore, of the "Teutonic," felt himself fortunate in turning over the patient alive to the late Dr. Goldthwaite, of New York. Our late fellow, Dr. Loomis, saw the patient the night of his arrival; I saw him the next morning. The striking features of the case at the time were those of prostration, suggesting shock and toxæmia. A possible appendicitis was considered by Dr. Loomis, but he was not prepared to make a positive diagnosis nor to advise operation. I did not see the patient again for three days, when I returned to escort him to Buffalo. He was then in coma, and died six hours after reaching home.

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[1] Read before the Association of American Physicians, May 30, 1895.

There were present during the last days general abdominal tenderness, moderate pain and tympany, no induration, the temperature never above 100°, and the pulse frequent and very feeble. Koumys, whiskey, and water were retained in fair quantity. The alvine evacuations appeared natural. Dr. Goldthwaite reported the urine free from albumin and sugar, although Dr. Radmore had found albumin present during the voyage. Catheterization was required before the use of anodyne. The diagnosis was not made. The general expression of the case was not unlike that of uræmia, but there was more abdominal tenderness and pain than seemed consistent with such a condition alone. The morbid anatomy is described further on by Dr. H. U. Williams.

Eleven days later, October 29th, there appeared in my ward at the Buffalo General Hospital, a Swede, E. A., male, aged thirty-nine years, a laborer. For three weeks preceding he had been under the care of Dr. W. H. Slacer, who reported that the man had been taken ill while at work some weeks prior with abdominal pain and nausea. At the time of examination, October 9th, the pulse was weak, counted 90, and the temperature marked 101°. The patient was emaciated, anæmic, slightly icteric, the tongue heavily coated, constipated, the feces light yellow and offensive. The urine was said to be natural in color and quantity, specific gravity 1024, with absence of sugar, albumin, and sediment.

The stomach was distended with gas; there was great tenderness over the stomach and to the right of the umbilicus. There were anorexia, great thirst, and occasional vomiting. Dr. Slacer attended the man for chills and fever one year before, from which he had made a complete recovery.

When received into the hospital the patient was greatly prostrated, and complained of sharp, lancinating abdominal pain, especially in the region of the umbilicus. There was general abdominal tenderness, slight tympany, but no perceptible induration.

As to his general condition, the skin was muddy and slightly icteric, the tongue was heavily coated, the pulse varied from 80 to 90 and was very feeble, the temperature was 99°. Time did not permit of a thorough examination of the urine, but it was found free from albumin and sugar. The man was unable to retain nourishment. He was given nutrient enemata, besides digitalis and strychnine hypodermatically. Morphine was repeatedly required for the relief of pain. This case resembled so closely the one previously described that I was much disappointed to find on the following day that the patient was dead, without a diagnosis having been made. The similarity of the cases will appear more striking after hearing Dr. Williams's report of the post-mortem examinations.

October 18, 1894, 4 P. M. Mr. E. L. H., Swede, aged fifty-nine years; dead thirteen hours. Rigor mortis firm in legs, not so well marked in arms; body appears well nourished; post-mortem lividity present over the back; subcutaneous fat 18 mm. thick over the thorax, 30 mm. thick over the abdomen; muscles of thoracic and abdominal walls scantily developed; costal cartilages calcified. Left lung free throughout; right lung adherent at apex; both lungs crepitated well and appeared normal; moderate congestion and œdema posteriorly. No unusual amount of pericardial fluid; valves of heart normal; muscles of left ventricle somewhat thinned, soft; cavity of left ventricle slightly dilated; aortic intima fatty. Spleen small, dark, and friable. Liver rather small, slightly fatty. Gall-bladder small, walls thickened, containing numerous dark gall-stones the size of buckshot. Mucous membrane of stomach, small and large intestines appeared normal; that of the large intestine showed white dots the size of a pin's head, scarcely noticeable; appendix 30 mm. in length, size of chicken-quill in diameter; except for its small size, normal. Kidneys imbedded in abundant fat, of each the capsule stripped off easily; parenchyma pale, cortex narrow; two small cysts on the surface of the right kidney. Urinary bladder contained about four ounces of urine; mucous membrane normal.

Most interesting was the condition of the fatty tissues of the abdominal cavity. The subperitoneal fat and that of the mesentery, mesocolon, and omentum was abundant. Imbedded in the fat of the omentum, mesentery, and mesocolon were great numbers of round, hard, white masses of variable size, mostly smaller than buckshot, white and opaque on section. In the mesocolon they were extremely abundant, often soft, and becoming confluent, making a pultaceous mass. The same condition prevailed in an extreme degree in the retroperitoneal fat behind the colon, stomach, and spleen.

Removal of the spleen revealed a large cavity, extending downward between the left kidney, the colon, and the stomach, containing a soft, cheesy substance resembling pus, with masses nearly as large as a pea, of firmer consistence. The fatty tissues bounding this cavity were grayish and necrotic in appearance. In this cavity lay the pancreas, surrounded by the same kind of material, some of which also was adherent to it. The fat about the kidney was sharply separated from the other retroperitoneal fat, and was unaltered, as was the fat of the anterior abdominal and thoracic walls.

The pancreas was eighteen centimetres in length, and to the unaided eye the parenchyma appeared normal; the duct of Wirsung was normally situated and was patulous. Microscopic examination showed its wall to be denuded of epithelium, except in the deeper folds, in which the epithelium refused to stain; the other tissues of the duct also stained badly; no cell-infiltration into it or around it was observed. On microscopic examination of the parenchyma of the pancreas the epithelium was found to take no nuclear stain at all in sections made at a number of points between the head and tail. The epithelium of the ducts behaved in a similar manner. The amount of interstitial connective tissue was not unusual. Over small areas it was moderately infiltrated with fat. A region of this character near the tail showed a small spot of fat-necrosis, having the character to be described later. The capsule for the most part was not thickened, and exhibited no cell-infiltration; near the tail it was slightly thickened and showed a small hemorrhage; it contained numerous round, oval, and spindle-shaped nuclei. No bacteria could be demonstrated in this pancreas, except in a single section from near the head, in which the duct of Wirsung contained numerous short, plump bacilli with rounded ends.

October 31, 1894, 4 P. M. Mr. E. A., aged thirty-nine years; dead fourteen hours. Rigor mortis firm; well formed, but slim; post-mortem discoloration well marked in buttocks, back, backs of arms, and neck; a number of dark spots in skin of anterior surface of right thigh, right upper arm, and left hip. Subcutaneous fat over thorax 6 mm. thick, over abdomen 18 mm. thick; subperitoneal fat well developed. Both lungs free from adhesions; pleural cavity empty; lungs small, crepitated well, and were normal; right weighed 13 ounces, left 9 ounces.[1] Pericardial cavity free from fluid; heart of normal size, weight 8½ ounces; usual amount of subpericardial fat; right ventricle contained large yellow clot, valves normal, muscle of ventricle of usual thickness and healthy; aorta moderately atheromatous. Spleen weighed 7 ounces, of normal appearance. Liver appeared fatty; centres of lobules congested. Gall-bladder dilated, encroaching on anterior surface of liver, which was notched correspondingly; its shape was unusual, being constricted about the middle, and the cystic duct compressed by a fibrous band; bile passed freely into the duodenum on pressure, however. Mucous membrane of stomach and duodenum normal; that of jejunum congested and œdematous, covered with mucus; ileum less so, except the lower two feet, which were congested. About three feet above the ileo-cæcal valve ileum was bound down by a recent-appearing adhesion, not very firm. Breaking of this adhesion disclosed behind it a cavity as large as a walnut, containing fluid resembling pus and small, harder masses. Appendix vermiformis 8.8 cm. in length, of which 7.5 cm. were free; tissue about the cæcum normal; mucous membrane of the colon near the splenic flexure necrotic and easily torn; colon beyond this point congested; contents yellowish, semifluid. Kidneys weighed 5½ ounces each; capsules stripped off with ease, appeared a little swollen; cortices very pale, medullæ dark; suprarenal bodies normal in size and appearance.

The peritoneum showed no congestion or exudate; beneath it the fatty tissues of the abdominal wall were sparingly dotted with small, hard, white nodules; the same were present in larger numbers in the mesentery; they were seen about the cæcum. Removal of the spleen disclosed a mass of necrotic tissue, soft, grayish, containing fluid resembling pus, small, hard, white masses, and others easily crushed between the fingers. This condition extended through the retroperitoneal fat-tissue to the splenic flexure of the colon. The necrotic portion of the colon already mentioned was in contact with black necrotic tissue behind it.

The fatty tissues about the pancreas were included in the same necrotic area. The outer surface of the pancreas was grayish-black, and dotted with the same white masses. The pancreas was 26 centimetres in length; weight, 2½ ounces. The head was large, quadrilateral, margin angular, sharply separated from the rest of the organ, which was united with the head by a constricted portion, about the size of a lead-pencil. (See Fig. 1.) Section of the pancreas showed it to be hard, fibrous tissue present in abnormal amount; parenchyma unusually reddened. The duct of Wirsung was patulous; microscopic examination showed its epithelium attached for the most part and well stained, and its walls appeared otherwise normal. In a section made through the head one of the large ducts was seen to be filled with desquamated epithelium and small round cells; this was not observed in other ducts. The epithelium of the parenchyma took the nuclear stain poorly. Occasionally small areas were observed not having any nuclear stain at all. The amount of interstitial connective tissue was unusual; it contained numerous nuclei and small hemorrhagic spots; number of fat-cells not striking. A section made through the constricted part of the pancreas mentioned showed two spots of fat-necrosis. The capsule was thick, consisting of fibrous tissue, with numerous round, oval, and spindle-shaped nuclei and hemorrhagic areas.

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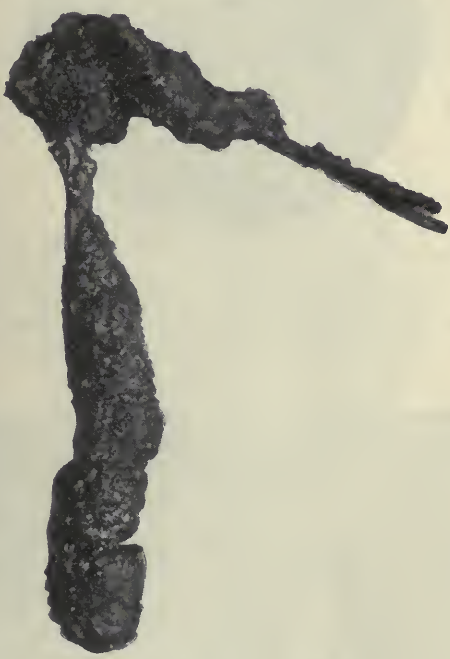
[1] The scale employed was a common grocer's scale. It seemed best to give the weights as they were taken

FIG. 1.



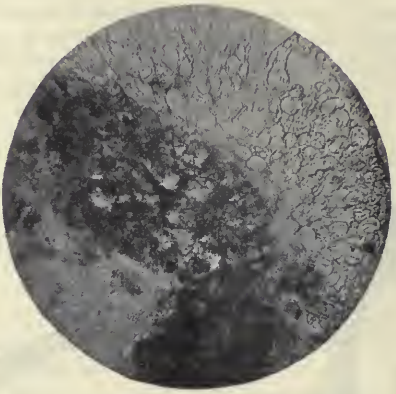
Pancreas. Case II. (× ⅓.)

Numerous bacilli, small and large, often forming strings, with square ends, were found in the capsule, extending to a less degree into the interstitial tissue between the acini for a short distance from the capsule.

Microscopic examination of the duodenum showed very large numbers of goblet-cells in the epithelial lining, moderate congestion, no cell-infiltration.

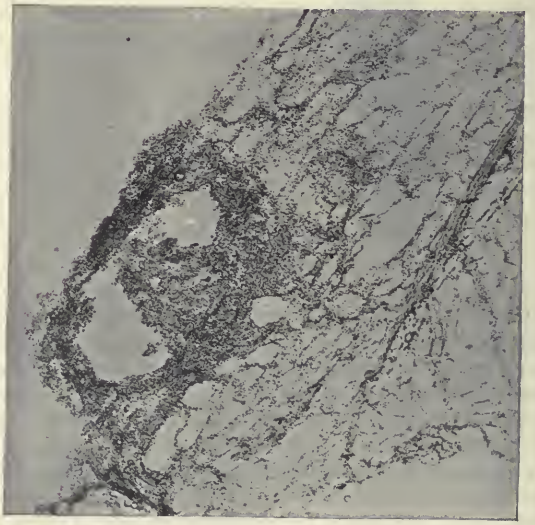
The histological appearances of the necrotic fat-material were identical in the two cases; they will therefore be described together. The pultaceous fluid consisted of opaque masses and granules, highly refracting globules, and needle-shaped crystals. Frozen sections of the white necrotic nodules showed them to be made up of similar coarse granules and masses, globules and crystals, and a small amount of masses of brown pigment. Some of them appeared to be enclosed in part by a

FIG. 2.



Frozen section of area of necrotic fat at its margin. Case I.

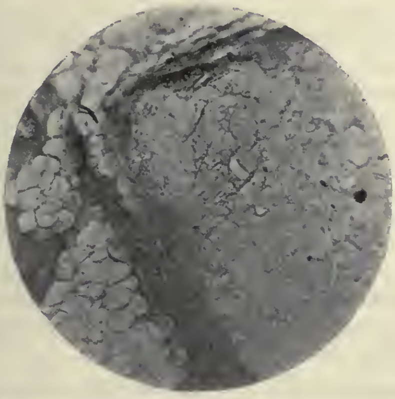
FIG. 3.



Fatty necrotic area, showing cell-infiltration after removal of fat and calcium-salts by ether and acetic acid, and staining with carmine.

definite connective-tissue boundary. The surrounding tissue was moderately congested; a few small extravasations were noted; the fat cells appeared normal. (Fig. 2.) Sections of the same imbedded in celloidin and stained with hæmotoxylin or carmine gave similar results. In them, however, the presence of a connective-tissue boundary to the spots of fat-necrosis was often demonstrated, even to the extent of forming a thick capsule. There was marked infiltration of this capsule and less of the underlying part, with cells having good-sized, round, oval, or spindle-shaped nuclei. The relatively healthy fat-tissue sometimes showed an increased number of nuclei. (Fig. 3.) Furthermore, owing to the partial solution of the opaque material by the ether used in imbedding, the outlines of what appeared to be fat-cells could be plainly seen in parts of these necrotic areas; and strands of connective tissue were visible traversing the areas. (Fig. 4.) Frozen sections of the spots of fat-necrosis were partially cleared up by the use of either ether or acetic acid; when the two reagents were used successively the opacity disappeared entirely. Evidently ether dissolved the fatty material, leaving an opaque substance, soluble in acetic acid; probably some calcium-compound. Analyses made by Dr. Lytle, Instructor in Chemistry, show the necrotic nodules to contain calcium phosphate in abundance, other earthy salts sparingly or in traces. These results are partly in accordance with the observations of Langerhans,[1] who found calcium in combination with fatty acids. Since our analyses were qualitative only, the possibility that enough calcium may have been present to unite with some of the fatty acids as well as the phosphoric acid is not excluded.

FIG. 4.



Margin of nodule of fat-necrosis, showing connective-tissue boundary and nuclei in it, and outlines of what appear to be fat-cells within the nodule. (Imbedded in celloidin, stained in carmine. × 130.)

The prominence of the nodules of fat-necrosis and the condensation of the connective tissue in front of them point toward an increase in size from a deposit of new material in them. It has already been noted that relatively unaltered fat-cells and strands of connective tissue were to be seen within them. The congestion, hemorrhages, and cell-infiltration indicate an inflammatory reaction about them.[1] Many sections appear to justify the view of Langerhaus that the connective-tissue boundary of the necrotic nodule coincides with the connective tissue originally surrounding a fat-tissue lobule.

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[1] Langerhans: "Uber multiple Fettgewebsnekrose." Virchow's Archiv, 1890, p. 122.

Numerous bacilli were found between the fat-cells about the spots of fat-necrosis in Case II.; large rods with square ends were most numerous; some smaller forms with rounded ends were also seen. They were not detected in the spots of fat necrosis themselves, nor were they more noticeable in their immediate vicinity than at some distance removed.

No bacteria could be found with the microscope in the fatty tissues of Case I., and unfortunately the circumstances attending the autopsy prevented the use of culture-methods. In Case II., however, inoculations were made both from the pancreas and the necrotic fat. From each a variety of bacillus was isolated in pure culture.

From the fat a bacillus was obtained, having rounded ends, growing both as short oval forms and as long filaments, actively motile, liquefying gelatine rapidly, and flourishing on the ordinary culture-media. It appears to be a variety of Proteus. Broth cultures injected into the abdominal subcutaneous tissues of rabbits evoked local suppuration; nothing resembling fat-necrosis was produced. From the pancreas a bacillus with rounded ends was isolated, growing both as short, oval, and long filamentary forms, not motile, or but slightly so, not liquefying gelatine, growing on the ordinary culture-media, coagulating milk, producing gas and acid reaction in 2 per cent. glucose-bouillon, giving a faint indol reaction in peptone solution, and in all respects behaving like Bacillus coli communis. Broth-cultures injected into the subcutaneous tissues of the abdominal wall of rabbits evoked local suppuration, but nothing like fat-necrosis could be found. Welch found the colon bacillus in the necrotic fat.

We do not appear, in either of these forms, to have secured the large bacillus with square ends seen in sections of the pancreas and fat-tissues. We are not, however, disposed to lay much stress upon it or upon them. It will be remembered that the pancreas lay, floating almost, in a cavity filled with a kind of pultaceous *débris*, and that this cavity was in part bounded by the splenic flexure of the colon, whose mucous membrane was in a necrotic condition. Under these circumstances the penetration of bacteria into the pancreas and fat to the extent observed is not surprising.

Furthermore, the histological alterations seen in the pancreas in each of the cases are probably accounted for by the condition of the surrounding tissues. Beyond the presence of a limited number of very small areas of fat-necrosis in the interstitial tissues of the gland and the occurrence of small hemorrhages, the organ in neither case showed more change than we have often seen in the perfectly healthy pancreas taken from the cadaver and preserved in the same manner as in those in question.

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[1] Chiari: "Ueber die segenannte Fettnekrose." Prager medicinische Wochenschrift, 1883, No. 30.

Perhaps the most striking feature of the cases under discussion is the existence in both of well-marked disseminated fat-necrosis, and in neither of well-marked pancreatic change. Chiari mentions having had a case of the same kind. The experience of most observers has been otherwise.[1]

It is noteworthy that in each of our cases there was abnormality of the gall-bladder; in the first in the shape of gall-stones, in the second in fibrous adhesions, the result of previous inflammation.

We are indebted to Prof. H. M. Hill, of Buffalo, for Figs. 1, 2, and 3, and to Dr. A. G. Hoen, of Baltimore, for Fig. 4.

A CASE OF LARGE, ROUND-CELLED SARCOMA OF THE TONGUE.

By Edward K. Dunham, M.D.

A tumor of the tongue, which upon microscopical examination proved to be a sarcoma, composed chiefly of large, round cells, was removed from a man sixty-one years of age, by Dr. J. D. Bryant, at Bellevue Hospital, New York, on January 27, 1894. Such sarcomata of the tongue are so unusual that this case seems worthy of record:

The clinical history is meagre. The parents of the patient are both dead; the father from some unknown cause, the mother from "old age," at seventy-three years. The patient had one brother and four sisters. The brother and one sister died of tuberculosis, the three other sisters are alive and well.

The patient has had good general health. He can recall having had malaria forty years ago, and has had some rheumatic pains in the right shoulder during the past year. He has been a moderate drinker, and has smoked a good deal, averaging about ten pipes a day.

Eight months before the operation he says that he bit his tongue, causing a blister, which did not disappear, but became irritated by contact with decayed teeth, and after about three months began to grow hard. From that time it grew slowly until a tumor three-quarters of an inch in diameter had been formed. He then applied for treatment.

The tumor was on the right border of the tongue, about an inch from the tip, or opposite the first bicuspid teeth. It was globular in form, smooth except for a few prominent papillæ on the upper surface, and presented no ulcerations. Its attachment to the tongue was broad, and not pedunculated. After its removal incision of the tumor revealed an almost perfectly spherical, light pinkish-gray neoplasm, of apparently uniform structure and moderately firm to the touch. The mucous membrane of the tongue could be traced as a thin covering over the whole surface of the growth, which did not appear to infiltrate the underlying muscular tissue. The accompanying illustration gives the appearance of the posterior aspect of the tumor in its bloodless state after hardening. It is a trifle less than natural size.

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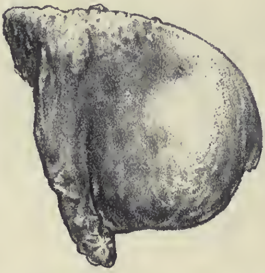
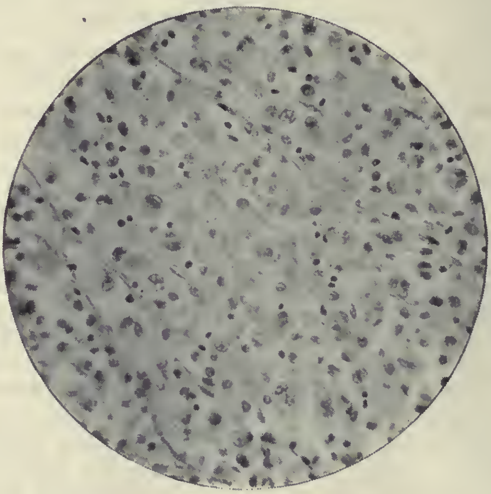
[1] Fitz: Medical News, vol. liv., 1889.

FIG. 1.



The tumor is chiefly of interest because of its structure. When examined under a low power of the microscope the epithelial covering of the tongue could be traced over the whole surface of the tumor. In most places it was normal, and rested upon fibrous tissue, beneath which in many places there were a few striated muscle-fibres. In other places the neoplasm approached the surface, and was covered by only a thin layer of fibrous tissue and a layer of stretched epithelium four or five cells deep. The subepithelial connective tissue was here and there the seat of a moderate round-celled infiltration. In no place was there any sign of its invasion by epithelium from the surface. Beneath these coverings was the neoplasm, which was not sharply defined from the overlying fibrous tissue, as prolongations from the latter penetrated the substance of the new growth, and became continuous with its fibrous elements.

FIG. 2.



The mass of the neoplasm was traversed by delicate processes of fibrous tissue, barely sufficient in most places to furnish support to capillary bloodvessels. These processes, by their disposition, gave the sections an irregular, recticular appearance. Between these fibrous processes were cells with an abundant protoplasm and from one to four distinctly vesicular nuclei. The majority of these cells were round, but a few spindle-shaped and some irregular cells were also present, the latter owing their shape apparently to compression. The round cells ranged in size from 9μ to 30μ in diameter, and a few, which were vacuolated, measured 45μ in diameter. Here and there among these cells were a few leucocytes with dense, nearly homogeneous nuclei. The photomicrograph fairly represents the general appearance of an average field amplified 270 diameters.

In 1892 Max Scheier (*Berliner klinische Wochenschrift*, p. 584) collected the published cases of sarcoma of the tongue, of which there were twenty, established by microscopical examination. To that number should, perhaps, be added two cases not very fully reported in the *Guy's Hospital Reports*, 1890, xlvii.

Of these reports, only one dealt with a large round-celled sarcoma. It was reported by E. Mercier, in the *Revue Médicale de la Suisse Romande*, 1889, p. 250. The tumor occurred in a man thirty-six years old, and had been growing for eight years. It was on the dorsum of the tongue, in the median line, the size of a nut, and pedunculated. It was covered by hypertrophied papillæ, and was an inch in diameter both antero-posteriorly and transversely. The microscopical examination showed the tumor to be composed of large cells of various forms, with from one to several large nuclei. At the periphery of the tumor, in the midst of the lobules formed by it, were bundles of muscular fibres and delicate nerves displaced by the proliferating elements of the neoplasm. Mercier says of this case that it is probably unique in the literature of tumors of the tongue.

Since 1892 no cases of lingual sarcoma appear to have been reported.

NOTE.—After the above report was sent to press I had the good fortune, through the courtesy of Dr. Stilling, of the Cantonal Hospital, Lausanne, to obtain a piece of the sarcoma of the tongue removed by Dr. Mercanton, and reported by E. Mercier. In structure it differs from the present tumor in being less distinctly alveolar. The cells are also more spindle-shaped, and there is more intercellular stroma than in the tumor now reported.

CARNEGIE LABORATORY, NEW YORK, March 2, 1894.

NEUROTIC VOMITING.

By Robert T. Edes, M.D.,
of Boston.

Vomiting is not a disease or even a symptom of disease of the stomach, nor any proof of the abnormality of its contents. It is a special and complicated reflex, involving the abdominal muscles, the diaphragm, as well as the muscular coat of the stomach, especially its cardiac orifice, with often vasomotor and sensory irradiations having but little to do with the primary object of the act, which is, of course, to empty the organ usually, but not always, at the bottom of the whole disturbance.

It is true that the sensory irritation which sets in motion these varied actions usually comes from the stomach, and that its occurrence must always arouse, as the first thought in diagnosis, a suspicion of something wrong with the viscus or its contents. It is well known, however, that in a considerable minority of cases the act may be provoked by a sensory irritation starting from any one of many points other than the gastric mucous membrane, or sometimes even originating, so far as we can see, in the vomiting-centre of the medulla oblongata itself.

The vomiting of Bright's disease is, perhaps, not the best proof of the correctness of this remark, for it is possible that a portion of the hypothetical poison may be secreted by the walls of the stomach, as has been found to be the case with some metallic irritants, for instance, tartar emetic; so that the act, which is apparently central vomiting, may really be taking its origin in the more common way.

It is, on the other hand, not only possible, but highly probable, that the poison of uræmia, whatever it may be, exerts its action directly upon the centre itself, as occurs with some other emetics, notably apomorphia.

Instances of this kind of vomiting, or in most persons a condition not going beyond the abortive sensory stage—*i. e.*, nausea—are to be found in the effects of disgusting sights, sounds, and smells. It is probable that in sea-sickness we have a reflex originating in the semicircular canals of the inner ear disturbed in their function as organs of equilibrium.

I do not know whether to place here or among the instances of purely cerebral vomiting the case of a former colleague, who used to tell me that he could not read more than ten examination books at a time without making him sick at his stomach.

Slight mechanical irritation of the fauces will often greatly assist or occasionally entirely replace, as an initiatory stimulus to vomiting, the irritation of the stomach. That this is something different from ordinary painful irritation of the same region is shown by the fact that it may be inhibited by bromide of potassium without abolishing the susceptibility to the latter.

One of the most common, most important, and best recognized of the forms of vomiting not immediately attributable to a disorder of the digestive tract is the vomiting of pregnancy, and that occurring at times in connection with other affections of the uterus. It is generally recognized by obstetricians that treatment directed to the uterus and nervous system is more likely to be successful than that based upon the condition of the organ apparently chiefly at fault.

Considering, on the one hand, the ease and frequency with which the single, or occasionally repeated, act of vomiting, may take place, and how often its effect is a conservative or beneficial one, it is not strange that it should excite no alarm, but often be looked upon as desirable. It is, however, more to be wondered at that long-continued, obstinate, nervous, or functional vomiting should have received so little attention from systematic writers. In most works on general medicine but little is to be found beyond the mere statement that such a state of things may occur, with perhaps a more detailed description of "anorexia nervosa," which, however, is not exactly the same thing, and may be accompanied by little or no vomiting. One hardly finds a hint of its sometimes severe and even fatal results. The obstetricians are, however, better aware that the condition is not of so slight importance.

Ewald, indeed, reports one fatal case in which, however, he surmises that a tumor may have been present in the medulla, causing, together with the vomiting, an abnormal frequency of pulse, and the epileptiform convulsions which occurred shortly before death. Beyond this he does not speak as if the prognosis usually *quoad vitam* were really serious, and says that "the general nutrition suffers surprisingly little." This optimistic view is, in by far the larger number of cases, the correct one, but not always so.

Löwenfeld says that "the severest conditions of inanition develop themselves. This severe form of hysterical vomiting is most frequently met with in pregnancy, and has in single cases led to fatal results. Fortunately, it is generally possible, when the condition of the patient threatens to take a bad turn, to put an end to the vomiting in some way or other." He adds in a footnote: "Guyot reports a case of hysterical vomiting in a non-pregnant patient lasting eighty-two days and terminating fatally."

Two erroneous impressions, not, perhaps, distinctly formulated, but tacitly received, lie at the bottom of this neglect. One is that, when persistent, vomiting must be dependent upon organic disease, chronic gastritis, ulcer, or carcinoma; the other, that if the absence of chronic disease can be clearly established the case has entirely lost the gravity of its aspect and the prognosis has become that of other functional disturbances, which, however annoying, do not seriously threaten life.

But neurotic vomiting does not stand, as regards its influence upon the economy, upon the same level as many other neurotic phenomena of similar origin and apparently greater severity. Coma, paralysis, and convulsions make a profound impression upon the lay bystander, but excite comparatively little alarm in the physician who is confident of his diagnosis of the absence of all organic disease. These may rapidly and completely disappear, leaving no permanent ill effects and without having seriously threatened life. But it is otherwise when a process, in itself just as causeless, so to speak, just as capricious, and, in its earliest effects, as harmless as that which gives rise to these more startling symptoms, affects the central organ of nutrition. A commander may look with comparative equanimity upon a raid or skirmish in his front, no matter how vigorous or noisy, when he would feel a well-founded anxiety were it directed upon his line of supplies. If the stomach empties itself thoroughly and inevitably whenever food is put into it, the system is deprived of its support just as surely when a perfectly healthy organ is being acted on by hypersensitized nerve-centres, as when a mucous membrane, rendered oversensitive by inflammation or a malignant growth, is the starting-point of a reflex which in itself is strictly normal and physiological. If the blood fails to receive its peptones, sugar, and fat, it must be just as surely impoverished, whether its loss be on account of the digestive glands having lost their power, or because they have been deprived of material to work upon by a capricious nervous system.

Fortunately in the great majority of cases it is true that the rejection of food is not constant and complete, and enough is retained not only to sustain life, but to justify the remark of Ewald just quoted. If, however, this lucky failure does not take place, then the result is inevitable, and calling a patient hysterical does not enable her to live without food.

There are cases in which no diagnosis of organic disease can be sustained, and in which, moreover, many positive signs of functional disturbance are present, which not only place the patient in a condition of extreme inanition, but may lead to a fatal result.

Case I.—Mrs. C., aged forty-one years, was seen twice in consultation with Dr. Bragdon, of Dorchester. She had had for more than a year persistent vomiting with what she called "fermentation"—that is, vomiting of acid material. There had been during this time one or two intermissions. On one occasion some blood of unknown origin had been brought up. The vomiting took place without reference to the time of eating. All sorts of diet had been tried. There were absolutely no cerebral symptoms, and there was no reason to suspect the kidneys. At the second visit the stomach was washed out with a flexible tube, with no result except the return of the water poured down and a little matter tinged with bile.

She emaciated and died.

At the autopsy the lungs were found to contain small cheesy deposits. The heart was small, but otherwise normal. The stomach showed nothing abnormal; the pylorus was unobstructed. The kidneys and other organs were normal.

Case II.—Miss C., always delicate and subject to sick headaches. Five years ago a pain began in the right side. Two and a half years ago her health began to break down entirely, with insomnia, headache, and "stomach-trouble." Soon after this an enlargement of a Fallopian tube was diagnosticated, and removal of one ovary suggested but not carried out. Some of the symptoms yielded to treatment, but the pain continued higher up, supposed to be due to old peritonitic adhesions. There were spells of "stomach-trouble," in which she was unable to digest or retain anything for five days at a time. In January, 1889, her diary informs us that she was suffering from insomnia, headache, "stomach-trouble," and on January 22d speaks of a "sharp, cutting pain in the extreme left side of the stomach" as a "new symptom." During this period she was going to parties and receiving calls in the intervals of distress.

In February "lost ground." She felt that she was not going to get well.

In March a diagnosis of cancer of the stomach and then of gastritis was made. There was obstinate vomiting. She took no food or drink except from time to time to "rinse out her stomach" by swallowing a glass of water, and then without an effort throwing it up again at once.

During this period she once took a little broth and a minute piece of fish, which were thrown up again undigested thirty-six hours afterward.

There were some thirty days preceding her death in which, with the slight exception just noted, no food was taken except by enema, although she was vomiting in small quantity.

Her mind during her whole sickness was perfectly clear until two days before death, when she fell into a mild delirium. I saw her two or three times with Dr. D. W. Prentiss, of Washington. She was then in a state of great emaciation, her condition remaining about as above described. There was never any vomiting of blood. The bowels were regular. The urine contained no albumin, but was highly concentrated, containing, a few days before death, 32 grammes of urea to the litre; but as the quantity per diem was not known, the total daily elimination cannot be given. It was presumably very small.

At the autopsy the body was found much emaciated, but with some fat still remaining in the omentum. The heart and lungs were normal, but containing very little blood.

The stomach contained no tumor and no ulceration. There were some congestion of the vessels and some ecchymoses undoubtedly originating about the time of death. It was nearly empty, with no large amount of mucus, presenting no extraordinary appearance to the naked eye, the mucosa seeming to be intact. This was confirmed so far as naked-eye examination of small pieces removed and hardened went, but the microscopic preparation was delayed a long time and was finally a failure.

The intestines had fecal contents. In the lower part of the large intestine were white masses, undoubtedly derived from enemata of milk. The liver was normal; the gall-bladder full of dark, thick bile. Pancreas normal. Spleen not enlarged. The kidneys were congested, but otherwise normal.

The right semilunar ganglion was apparently normal in the midst of undefined connective tissue; the left not found.

The uterus was anteflexed, the tubes normal, ovaries flabby, with no corpora lutea. There was no trace of previous inflammation of the uterus, its appendages, or of the peritoneum.

The nomenclature of such cases as these is not altogether a matter of indifference, inasmuch as it may have some influence on the mind of even the practitioner, and if not very carefully contrived is likely to lead to harmful misunderstandings between him, his patient, and her friends. Until it is possible to relieve the words "hysterical" and "nervous" from a certain flavor of disapprobation and suspicion which still clings to them, or until we ourselves get rid of the habit of prefixing, at least mentally, the word "only" to these names, they should be used very carefully.

"Hysterical" in the oldest sense of being connected with uterine disturbance they may or may not be, and those which are so are probably, as being more amenable to local treatment, not the very severest type. Neither of these two cases seems to have possessed the old-fashioned hysterical disposition. The second, though evidently of an affectionate and emotional character, was calm and cheerful in her bearing and seldom gave way even to tears.

In neither was uterine disease found, and in the second the traces of a tumor suspected, of dilated tubes, and of uterine disease said to have been cured by electricity, were looked for in vain.

On the other hand, there were no manifestations of the "grand hysteria" of the *Salpêtrière.*

But "hysterical" in the sense of purely functional and neurotic they undoubtedly are in the same sense that joints are "hysterical" in many cases where they are non-usable and painful, and limbs paralyzed and contractured, and the skin when it takes on certain vasomotor conditions simulating eruptive diseases, or the subcutaneous connective tissue when the extremities become blue and swollen, and so on.

It is to be regretted, in the interest of completeness, that the special "stigmata" were not sought for; but the diagnosis, though it might have received some confirmation from their presence, does not depend upon them.

If there is any lesion in such cases, it must be in the brain, and of such a character as not to be seen by processes yet discovered.

The practical point in the diagnosis is, whether or not organic disease be present; and this is to be determined chiefly by an exclusion, as far as possible, of inflammation, malignant disease, and especially of ulcer, being confirmed perhaps by the presence of other and distinct signs of the neurotic diathesis. It should be remembered, however, that neither ulcer nor cancer is a protection against the neuroses. In one of these cases the attending physician, a practitioner of large experience and sound judgment, who had studied the case thoroughly and exhausted the resources of medicine and careful feeding, firmly believed in the existence of malignant disease until he actually saw the stomach at the autopsy.

It might be suggested, since no examination of the head was made in this second case, that there was a lesion of the medulla oblongata so circumscribed as to give rise to the symptoms of gastric pain and vomiting, and no other. It can only be said of this hypothesis that such a state of things is conceivable in the abstract, but that no such case has been reported, and it is in the highest degree improbable that even one case should go on to a fatal result without a single other manifestation of cerebral disease; and when two such in the observation of one person are called for to sustain this theory the probability becomes too small to be considered.

The doubts in diagnosis, which fortunately can never be resolved in the present instance, are illustrated by

Case III.—Seen in consultation with Dr. J. L. Hildreth. This patient was a delicate-looking, light-complexioned girl, with a distinctly neurotic family tendency, who had worked hard and distinguished herself in her own education and had then become a teacher, besides sharing in family anxieties.

Two years before the present illness she had had a distinct attack oi melancholia. With this exception, she was well until August, 1892, when, being at the time tired and weak, but resting in the country, she began to vomit. She got better and went to work again, but in December was again taken with vomiting and was obliged to keep in bed. The vomiting was persistent and for a long time resisted all treatment. She lost flesh and strength, although she had but little pain. There was no hæmatemesis. A temporary improvement took place in January, following upon the administration of small doses of codeine; but the former condition soon returned and was aggravated, so that not the smallest portion of food could be retained. The tongue became red and dry, the pulse small and rapid, the emaciation extreme, and she presented every appearance of rapidly approaching death by inanition, which for some hours her attending physician supposed to be close at hand.

This, however, seemed to be the turning-point. She soon took and retained a small amount of champagne, and, later, milk and lime-water, which latter was increased with considerable rapidity, so that when she entered the Adams Nervine Asylum she was fairly convalescent, and went on to complete recovery, gaining flesh rapidly and having no symptoms of any special interest except to herself. There was no gastralgia, very little that could be called even dyspepsia, and but slight nervous manifestations, except a good deal of exaggeration and tendency to self-inspection. During the whole time there were no specially hysterical manifestations and her mind was perfectly clear.

The diagnosis of such cases is obviously the important and for an efficient treatment the fundamental one. It is true that the great majority of cases would of themselves come to a satisfactory conclusion after a greater or less time of any treatment, and, of course, under such as would be directed toward organic disease; that is, so far as the dietetic management is concerned; but the time and anxiety consumed would be greater than if a less careful treatment were supplemented by other measures directed to the nervous condition. Hence the diagnosis, even if it cannot be always absolutely certain, should be made as nearly so as possible.

There is no symptom specially characteristic of functional vomiting. The presence of other neurotic symptoms, either together with, or even more conclusively if ceasing in order to give way to, an attack of obstinate vomiting, would not be proof positive perhaps, but in the highest degree suspicious.

The absence, during considerable time, of vomiting of blood would be a strong point in favor of a neurosis; but when it is remembered that a moderate hemorrhage into the stomach may not be thrown up at all, but pass away, possibly unnoticed, by the bowels, we are again left at fault.

On the other hand, repeated vomiting of blood would be more conclusive of organic disease than anything else, except the finding of an epigastric tumor. A single occasion of hæmatemesis, even if copious, is of much less value. Hysterical hæmatemesis is not very rare, and may or may not be a vicarious menstruation. If repeated at regular intervals, its purport would at once be evident.

As to the assistance to be gained by an analysis of the stomach-contents vomited, or withdrawn by the tube, we find that, unfortunately, the hydrochloric acid is increased in nervous gastralgia as well as in ulcer. Complete absence of free acid has also been seen in cases of nervous dyspepsia, and might obviously lead to the suspicion of cancer. I know of no observation made in a case of exactly the kind described above, that is, where the vomiting is a much more prominent symptom than the pain; but it is possible that a persistent absence of hyperacidity, together with the painless vomiting, would be a significant combination.

Dr. Routh remarked in one of the discussions on the subject that hot drinks increased the pain of ulcer, but repressed that of neuralgia.

Ewald gives an elaborate table of the distinction between nervous gastralgia, gastric ulcer, and gastric cancer, which I forbear to quote, since its value is so heavily discounted in the immediately following remark: "I hope that this table may be of some service in establishing a differential diagnosis. However, sharp as the distinction between the three pictures may appear on paper, we find often enough in practice that just the most important symptoms are absent, or so combined with one another, or so vaguely manifested, that an exact diagnosis cannot possibly be made."

In the third case here reported the physicians who saw it were agreed that the weight of evidence lay upon the side of nervous vomiting, and this view seems to have been confirmed by the rapidity and completness with which recovery took place after it had once begun. The essential points were chiefly the absence of vomiting of blood and the occurrence of the whole affair as a consistent part of a distinctly neurotic history. If, however, one should choose to affirm in a similar but less carefully observed case, that bloody stools had already been present but not seen, and that the neurotic symptoms were the consequence of anæmia rather than *vice versa,* it would be difficult to confute him.

Of diseases other than those of the stomach, which might easily present symptom-groups simulating nervous vomiting, there are two which deserve mention, Bright's and intracranial tumor; but the possibility of either of these being associated with persistent vomiting having been recognized and the case investigated from that point of view, the chance of error would be extremely small.

In a case of hysterical anuria the presence of urea in the vomitus would have a value in the diagnosis if any confirmation were needed. Pelvic complications are to be sought for and remedied. In special and favorable cases this may be the end of the matter, as in the vomiting of pregnancy; but local uterine treatment is no more universally successful in this than in other neuroses, so that its failure would prove nothing as to diagnosis.

Dr. Bristow (*Lancet,* June 20, 1885) makes the highly important observation that in some cases the so-called vomiting is in reality regurgitation, and cites the case of a girl who brought up even the smallest quantity of food. He was satisfied that the food swallowed did not reach the stomach and was arrested at the lower end of the œsophagus. She was cured by a single passage of the tube.

The treatment of neurotic vomiting presents few points of interest, so far as drugs and diet are concerned, from that employed to check vomiting from other causes. Almost any of the medicines called gastric sedatives or antiemetics may prove useful, but nothing is specific.

In the matter of diet, it is perhaps less easy to find some one article which will always be well borne than when the vomiting depends upon organic disease. It is, however, desirable not to make the search too limited, for the appetite may be capricious, and the choice will depend more upon it than upon chemical composition. Any physician can tell queer stories of what patients can and cannot eat or think they cannot. The hospital patient, who has been carefully fed by the rectum or on predigested milk or the like dainties, steals his neighbor's fried ham and eggs and thrives thereon. The consumptive's stomach, which has for days rejected the most ingenious and artistic concoctions, quiets down under the indigenous baked bean, only to be again aroused by a delicate and very expensive bean-flour called "Revalenta Arabica." The next effectual sedative is a piece of good solid pound-cake.

Articles of diet called "bland" are by no means more universally acceptable to the sensitive or disgusted palate than a smile of the same character is to the perturbed spirit.

Variety and "little and often" are two good principles to bear in mind; but there is no rule which will not be found to have important exceptions.

The more food-preparations of any kind the physician is familiar with, the better. One may be retained when another is rejected, not because it is better but because it is new.

The most important part of the treatment is by no means the easiest to formulate; I mean the moral control and psychical stimulus or sedation.

It must combine firmness with kindness, caution with boldness, and the whole with fertility of resource, common sense, and adaptability to the case in hand.

The act of vomiting is, to a certain very limited extent, directly under the control of the will; but much more completely is it, together with the whole process of digestion, indirectly subject to nervous influence.

How easy is it to disgust a sensitive person with any article of food by some unpleasant detail as to its source or the method of its preparation. It is certainly consonant with the views of hysteria held by some theorists that a fixed idea or some incident forgotten as to the ordinary consciousness, but retained in the "subliminal," may be constantly exciting the centres controlling the action of the stomach. In the second of the cases reported it is more than probable that the idea of the patient that she was not going to get well had a good deal to do with determining the result.

If a patient believes that she must vomit, she will do so. If, on the other hand, there are no nerve-endings in the gastric mucous membrane irritated by inflammation or neoplasm, no cells in the medulla to be compressed or poisoned, assurances that she need not and must not vomit are of more value than bismuth, creosote, or ice. One gentleman proposes to check hysterical vomiting by the simple plan of bringing no basin.

Here, of course, is where the diagnosis is of supreme importance. The physician cannot give those hearty assurances of recovery with convincing vigor, nor exercise the necessary firmness in urging food, if he has a feeling that the patient may at any moment bring him to shame by a hemorrhage or a perforation, or her confidence be slowly undermined by the gradual development of a growth in the epigastrium.

He can feed her so as not to do harm in either case, and sometimes it may be that this is for a time all, until the diagnosis is established;

and it is not necessarily any imputation upon the diagnostic skill of the practitioner that he may be obliged thus to temporize. It is not, however, until he can cut loose from the very limited bill of fare and assure his patient that the lactated milk or the malted glucose, to which her faith is pinned, is not her only hold upon life, and that it is time for her to enlarge her diet, that he is really reaping the benefit of a positive diagnosis.

Measures which appeal to the reason or to the imagination as being appropriate to the relief of stomach-trouble may have, from the force of suggestion, an efficacy much beyond their intrinsic value. "The experience of Kaltenbach,[1] Alt, and others shows that by appropriate suggestive treatment the vomiting in the severest cases of hyperemesis can be checked. Kaltenbach and Alt washed out the stomachs of their patients, and then suggested that since everything harmful had been removed the vomiting must necessarily cease. This suggestion proved efficacious and the patients recovered completely. Whether such suggestive treatment would be easier and more effectual with the patient in a condition of hypnosis I do not undertake to say. My belief would be that if it could be made efficacious at all in a non-hypnotized person the effect would be much more durable.

THE AREA OF THE MURMUR OF MITRAL STENOSIS.[2]

By J. P. Crozer Griffith, M.D.,
PROFESSOR OF CLINICAL MEDICINE IN THE PHILADELPHIA POLYCLINIC HOSPITAL; CLINICAL PROFESSOR OF THE DISEASES OF CHILDREN IN THE UNIVERSITY OF PENNSYLVANIA.

The region in which the murmur of mitral stenosis is ordinarily heard is well known, and is generally described as limited sharply to the mitral area or its immediate vicinity. Through several years past it has been the writer's lot to meet with a comparatively large number of cases of this disease, and to have the conviction more and more impressed upon him that the murmur, although usually confined to the region of the apex, is not at all infrequently heard much beyond the ordinarily prescribed limits. In these cases the murmur has oftenest occupied the mitral area, and has extended thence in a narrow, tongue-shaped band upward and to the left into the axilla. In other cases it was audible in an area much greater than this; and it is instances of the latter sort which have finally lead to the report of the observations.

The fact that this murmur can be audible beyond the usual limit is, of course, not at all new; and reference to it, with details of cases, might with reason be judged entirely superfluous were it not for the fact that there is for the most part such a uniformity of description in most modern text-books regarding the area in which the murmur of mitral stenosis can be heard, and that this description so generally ignores or denies the possibility of it being audible beyond the narrow confines of the apex. It is on this account that the writer would venture to call the attention of the members of the Association to the matter.

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[1] Löwenfeld: Neurasthenie und Hysterie, p. 436.

[2] Read before the Association of American Physicians, May, 1895.

As a matter of fact, a number of the members have already, in various text-books, put themselves on record with regard to it, some defining the narrow confines of the area of the murmur, others implying these at least, since they fail to refer to the possibility of any other seat than the one usually given, and very few—but two were found—referring to the rare occurrence of a wider distribution.

No extended search through other modern text-books was made, but those which were at hand failed with tolerable uniformity to speak of the murmur of mitral stenosis as audible anywhere but at or near the apex. Thus Vierordt (*Medical Diagnosis*, 1891, p. 228) says it is always strictly confined to the left border of the heart. Petit, in the article in the *Traité de Médicine*, vol. v. p. 25, at least implies that it does not extend far to the left of the apex, although the language is not quite clear; Leube (*Specielle Diag. der innere Krank.*, 1891, 22) says merely that it is heard at the apex; Fagge (*Practice of Medicine*, p. 70) states that it is limited to the apex, and Sansom (*Cyclopædia of the Diseases of Children*, vol. ii. p. 829) says that the murmur disappears suddenly away from the neighborhood of the apex. The article of Potain and Rendu in the *Dictionnaire des Sciences Médicales* ("Cœur," p. 585) does make the statement, however, that it is not rare for the murmur to be heard toward the region of the axilla, and Bristowe (*Practice of Medicine*, 1876, p. 480) says that it is very rarely audible at the back or at the base.

As we go slightly further back in medicine the possibility of a wider transmission than is now ordinarily admitted seems to be better recognized. To quote only two authors, Walsh (*Diseases of the Heart*, 1862, Amer. ed., p. 91) says that the murmur is "conducted in the same directions, although less extensively, as the mitral systolic murmur;" and Hayden (*Diseases of the Heart and of the Aorta*, 1875, p. 905) admits the possibility of it being heard, though only faintly, beyond the ordinary strict boundaries of the apical region. He reports in all 81 cases of mitral stenosis, and says that in these he has heard the murmur in the back in only 1 case and in the axilla in 3 cases.

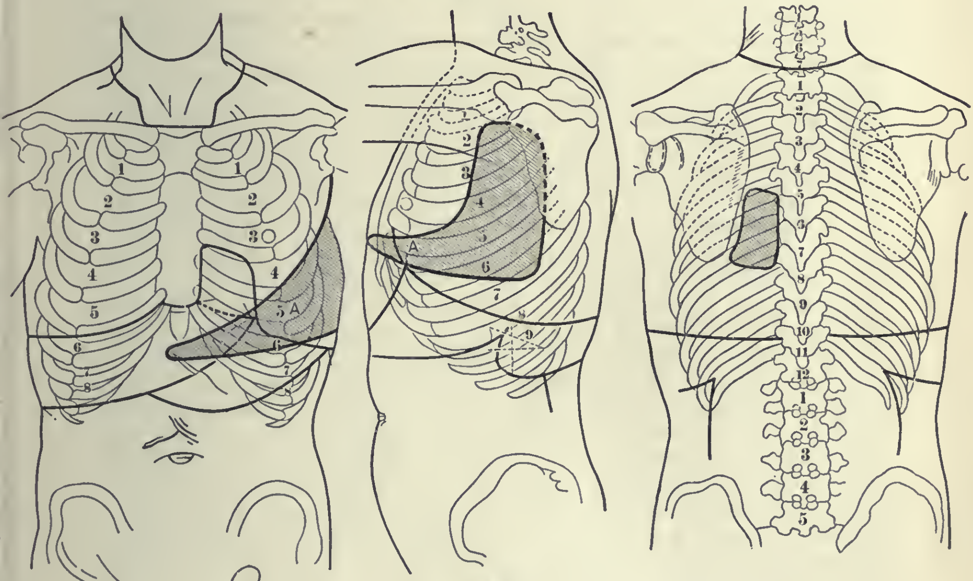
Briefly, then, the position which the writer assumes, is that the area ordinarily described in which the murmur of mitral stenosis is audible is the correct one for the majority of cases, but that the murmur can quite often be heard more widely diffused than this, and that this fact should be recognized and mentioned by teachers and writers on the subject.

That the extensive area of audibility of the murmur is more frequently present than is supposed, even by those who have admitted its possibility, is indicated by the fact that the following 7 cases have all been examined within the last three months. In 3 of them the murmur was audible in the back, in 1 it extended two and a half inches beyond the left posterior axillary line, in 4 it reached the posterior axillary line, and in 2 the mid-axillary line. In all it was audible very high in the axilla.

For the sake of greater clearness the case-histories include diagrams showing the area in which the murmur could be heard in each case.

Case I.—William L., aged about twenty-three years. Since childhood had never been able to run well. Got out of breath easily. When first seen, toward the end of January, 1895, had been having evident symptoms of loss of compensation of the heart, with dyspnœa, palpitation, troublesome cough, and some degree of œdema. Improved in a remarkable way under treatment. Came for further examination on March 29, 1895. An abstract of the notes made at that time read as follows: Pale and delicate-looking. Chest long and narrow. Nipple in third interspace; apex-beat in fifth interspace an inch outside of the nipple-line; cardiac dulness, third rib; thence to second right interspace just at edge of the sternum; thence down the right edge of the

Fig. 1.

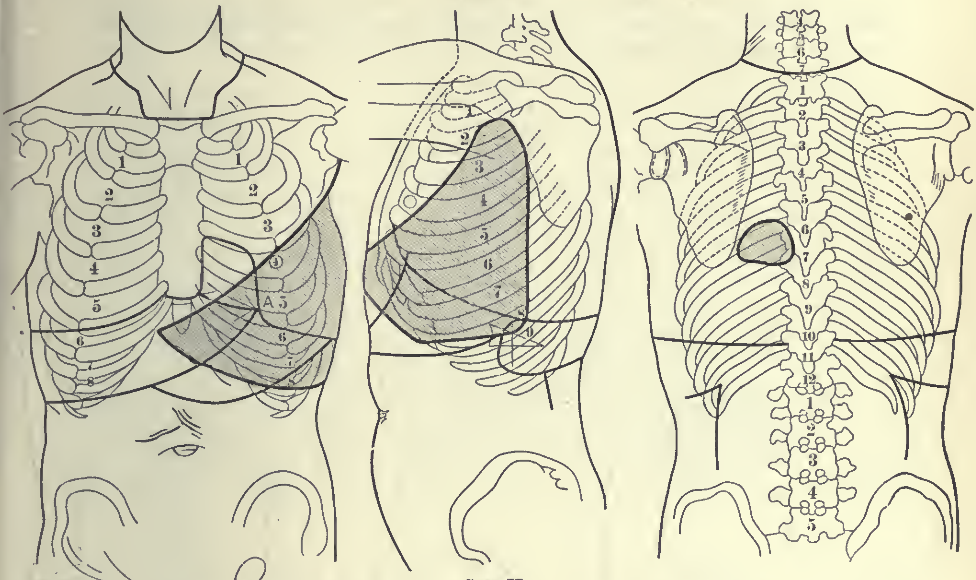


Case I.

sternum. To the left it reaches one inch to the left of the nipple-line. Whole breadth six inches. There is a decided prominence of the left costo-sternal articulations, especially the third, fourth, and fifth, apparently the result of long-continued pressure of the hypertrophied heart. Apex-beat forcible, heaving. Pulsation also over base, but not seen over the right auricle. (There was, as I remember, a very marked thrill, but no note was made of it.) A loud diastolic murmur is audible, with maximum intensity over the apex. It occupies nearly all the diastole and ends abruptly with the first sound, is rough and purring in character, and is heard loud up to the fifth rib, where it stops with striking suddenness. Thence the limit of its area extends obliquely down to the right to one inch below the xiphoid cartilage. Here it makes a sharp curve on itself and returns to the left costal margin, leaving a strip about one inch broad. It runs back along the left costal margin to the nipple-line; thence it follows the sixth interspace, crossing the seventh rib in the mid axillary line and touching the seventh interspace two and a half inches behind the posterior axillary line. Thence it goes straight upward to the edge of the scapula, thence nearly horizontally to the right to high in the axilla just below the junction of the arm with the chest; thence obliquely down to the right to the fifth rib. The murmur is heard very distinctly as far as the mid-axillary line, but only faintly beyond this. The whole breadth of the area is twelve inches, the height about four inches At the back, between the edge of the scapula and the spine, is another area, almost but not quite continuous with the former, in which the murmur is faintly heard. A systolic murmur, smooth and comparatively faint, is heard in an irregular circle five inches in diameter, whose centre is a little above and to the left of the xiphoid cartilage. The pulmonary second sound is accentuated. No murmurs can be heard at the aortic cartilage or in the neck.

Case II.—Samuel B., aged twenty-six years. Examined March 21, 1895. Complains of abdominal pain; swelling after eating, belching, and other symptoms of indigestion. Well-nourished man, whose business makes him walk a great deal. Questioning elicits the existence of palpitation and dyspnœa on slight exertion, apparently dating from an attack of grippe the year before. No cough, but occasionally pain in the chest. No œdema. Examination shows heart's action irregular; forcible pulsation in epigastrium and at apex. Apex-beat in fifth interspace within the nipple-line; a distinct diastolic thrill at apex felt as far as the mid-axillary line. Cardiac dulness, third rib; right edge of sternum; nipple-line. A low-pitched, very rough murmur, occupying nearly all the diastole and running into the first sound, is heard with maximum intensity at apex. It is heard upward to the nipple, thence obliquely downward to the right costal margin below the level of the xiphoid, thence obliquely downward to the left costal margin in the nipple-line, thence obliquely upward to the ninth rib in the posterior axillary line, thence upward to high in the armpit, and thence obliquely downward to the nipple. The area is ten inches transversely and six inches in height. The murmur is also heard faintly between the angle of the scapula and the spine. No other murmurs can be discovered. The pulmonary second sound is accentuated. Both sounds over aortic cartilage are feeble; over sternum loud. First sound forcible and valve-like at apex. Pulse small.

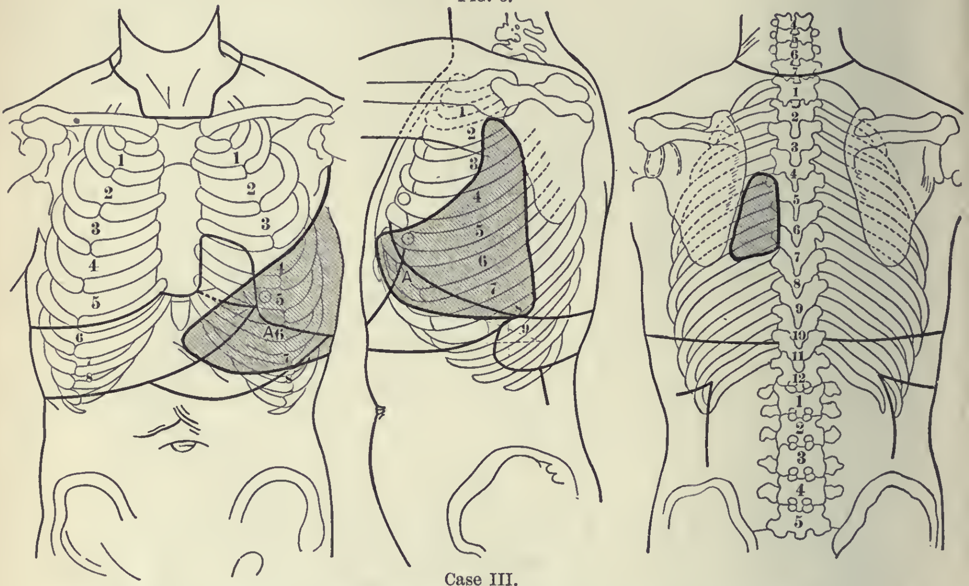
FIG. 2.



Case II.

CASE III.—Jennie S., nine years old. Slightly built and undersized. Previous history and history of other diseases unknown, except that she had been an inmate of the Children's Hospital at different times during the greater part of two years, suffering from very severe cardiac symptoms which often threatened life and at other times were largely quiescent. There had been repeated nose-bleed, intense cardiac pain, congestion of the lungs with fever, great dyspnœa, palpitation, but no or but little œdema. Examinations of the heart were made at various times, all corresponding for the most part in their result. In May, 1894, the examination showed: Bulging præcordium; wide, heaving impulse; apex-beat best felt in sixth interspace in the nipple-line; distinct diastolic thrill. Boundaries of the cardiac dulness were the second rib slightly to right of right edge of sternum; fully one inch to left of the left nipple-line. The auscultatory symptoms were much as at the final examination made in March, 1895, at a time when the child was playing about the ward and was in very good condition. The notes of this examination read as follows: At apex, which is in the sixth interspace one inch outside of the nipple-line, there is a loud, roaring murmur occupying all of the diastole, followed by a loud systolic murmur. The latter is transmitted into the axilla. The diastolic murmur is transmitted downward from the apex to the costal margin, thence transversely to the left to the posterior axillary line in the eighth interspace, thence high into the armpit, thence obliquely downward to the nipple in the fifth interspace, thence obliquely to the xiphoid cartilage, and thence finally to the left costal margin. The horizontal breadth of the murmur is five inches, and the height three and a half inches, a very large area in a child no larger than the ordinary size of six or seven years. The maximum intensity is at the apex and in the eighth interspace in the axilla. The murmur is audible between the spinal column and the edge of the left scapula. No murmurs heard at the aortic cartilage or in the neck. Second sound much accentuated at the pulmonary cartilage, and a systolic murmur heard there.

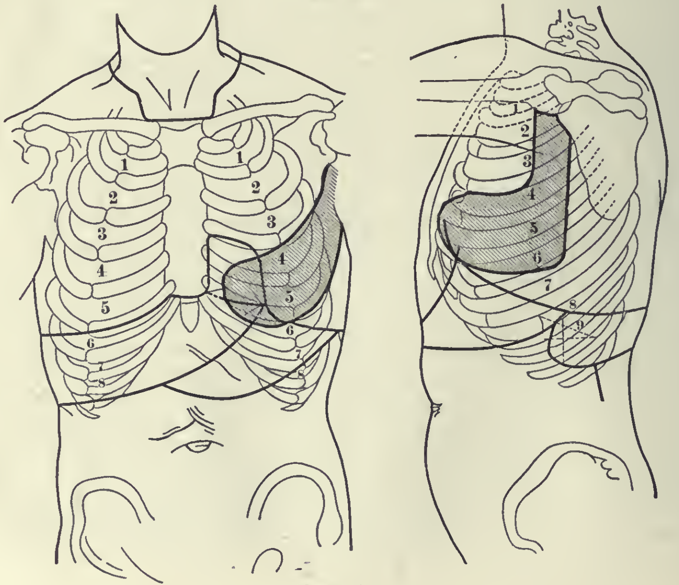
FIG. 3.



Case III.

CASE IV.—Mary M., aged twenty-one years. Rheumatism four years before; dyspnœa and cough for a year. Present complaint is

FIG. 4.

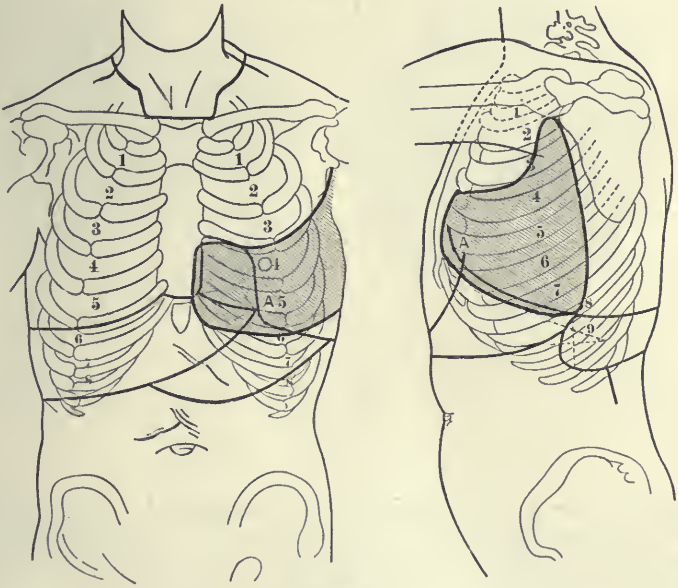


Case IV.

great dyspnœa, with some pain about the heart. Various physical examinations of the chest were made with varying results as to the number of murmurs present, although a mitral diastolic murmur was always found. Examination on March 16, 1895, gave: Diastolic thrill over the apex and præcordium. A very characteristic rough, low-pitched murmur, occupying the last half of the diastole and running into the first sound, is heard at the apex and in the mitral area, and is also transmitted into the axilla, reaching to the left as far as the posterior axillary line, and extending high into the armpit. This upper portion of the area reaches forward to the right from the armpit only as far as the anterior axillary line. The murmur is not heard in the back. The first sound at the apex is sharp and valve-like and free from murmur. Pulmonary second sound accentuated. No murmur at xiphoid cartilage. Aortic second sound clear. Faint systolic murmur at aortic cartilage. Circumstances prevented a careful outlining of the cardiac dulness, but previous examinations had noted it to be increased. On April 30th the murmur was found to be audible posteriorly as far as before, and to extend downward as far as the seventh interspace.

Case V.—Jennie H., aged ten years. May 13, 1895. Complains of palpitation, chiefly on exercise. Was perfectly well until last Easter, at which time had some pain over the heart, and other cardiac symptoms began. At present has a severe cough. No history of other diseases. Examination shows: Forcible heaving impulse over whole præcordium. Apex-beat in fifth interspace, nipple-line. Diastolic thrill at apex. Cardiac dulness, third rib; right edge of sternum; three-quarters inch outside of left nipple-line. Total breadth, four and a quarter inches. Low-

Fig. 5.

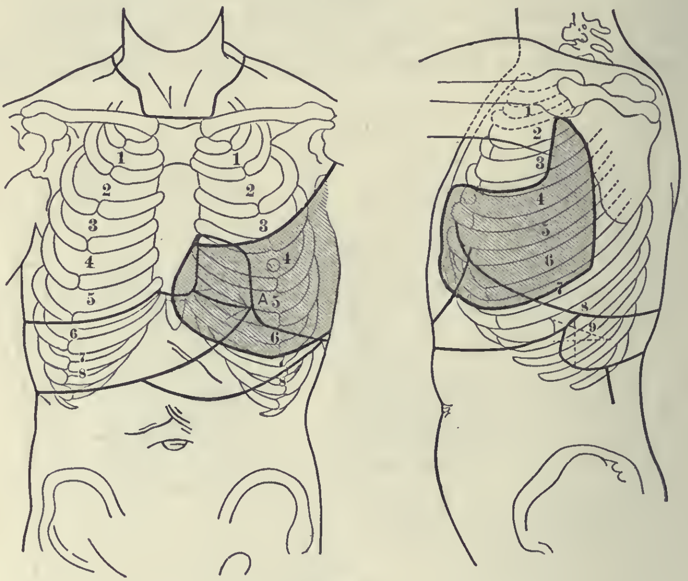


Case V.

pitched murmur at apex, occupying last half of diastole, and running into louder systolic murmur. The systolic murmur is transmitted loudly to axilla, pulmonary cartilage, and back. The diastolic murmur reaches upward to the fourth rib, thence transversely to the left edge of the sternum, thence down to xiphoid, thence across to the sixth interspace in the left nipple-line, thence posteriorly as far as the eighth rib in the mid axillary line, and thence high into the armpit and down to the right to the fourth rib as stated. It is not heard in the back. At aortic cartilage the second sound is clear, and there is a faint systolic murmur transmitted into the neck. Pulmonary second sound accentuated.

Case VI.—William S., aged thirty-one years. Rather delicately built man, at present in comparatively good health, but cannot walk rapidly without palpitation and dyspnœa. Well as a boy, and active as anyone, but had rheumatism when twenty-three, and then began to get short of breath, to have palpitation, and sometimes cough. He had hemorrhages so often that he grew weak, and friends thought he was going into consumption. Examinations on many different occasions gave always a pure mitral diastolic murmur. At the last examination, April 30, 1895, the following note was made: Apex-beat in fifth interspace one and a half inches within the nipple-line. Nipple in fourth interspace. Forcible pulsation at apex and distinct diastolic thrill there. Cardiac dulness, third rib; right edge of sternum; nipple-line. A long, loud, rough murmur, heard loudest at the apex, occupies nearly all the diastole and runs into the first sound. It extends upward to the fourth rib above the nipple; thence nearly horizontally to one-half inch to left of mid-sternum opposite fourth interspace, thence

Fig. 6.

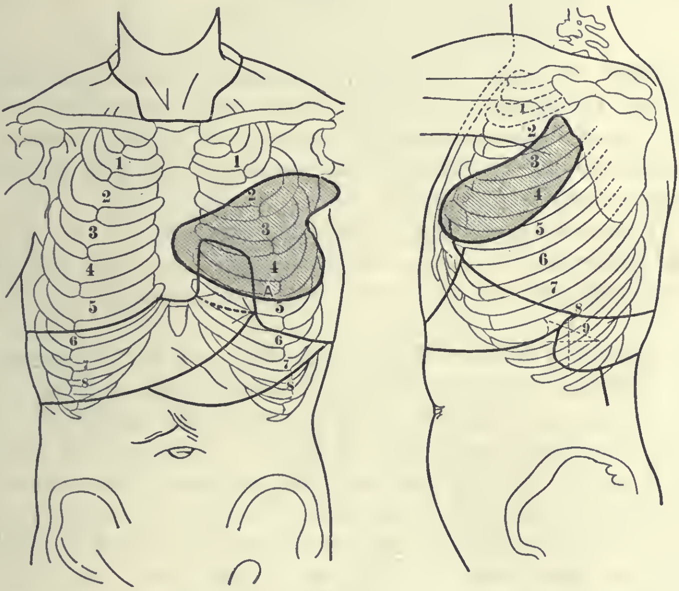


Case VI.

downward for four inches to xiphoid cartilage; thence in a curve down and to the left along the costal margin to three inches to the left of the median line, thence obliquely upward in the seventh interspace as far as the posterior axillary line, thence straight upward to the edge of the armpit, thence into armpit as high as the stethoscope will go, thence obliquely downward to the right to the fourth rib as stated. High in the armpit it is very distinct, but at the other boundaries is faint. It is not heard in the back. The whole breadth of the murmur is about nine inches, and its height seven or eight inches.

Case VII.—The following case was obscure in some points, inasmuch as the suspicion existed at one time that a pericarditis was present, while there also seemed some indication of an aortic regurgitant murmur. Both of these would obscure the diagnosis of mitral stenosis. The repeated examinations, however, convinced me of the presence of mitral stenosis, and the concomitant symptoms supported the opinion.

Fig 7.



Case VII.

To avoid confusion, only the notes regarding the mitral stenotic murmur will be reported:

Katherine H., about ten years old, had had repeated rheumatic attacks. Evidence of heart disease for at least six years. Chief complaints had been dyspnœa, palpitation, and for a few weeks severe cough. When first examined in January, 1895, the præcordium was prominent; apex-beat best felt in fifth interspace in the nipple-line; thrill immediately before the impulse. The boundaries of the cardiac dulness were, third rib; right sternal margin; nipple-line. Auscultatory sounds confusing, but a systolic and a diastolic mitral murmur were evident. The last examination, made in March, 1895, was as follows: At apex a systolic murmur with clear second sound, the latter immediately followed by a somewhat irregular diastolic murmur. The diastolic murmur is transmitted faintly high into the armpit, just below the arm, thence to the second left interspace in the anterior axillary line, thence to the third left interspace close to the sternum, thence to the mid-sternum opposite the fourth interspace, thence downward and to the left to the apex. It is loudest at the apex in the fifth interspace, nipple-line. It is not heard at the xiphoid cartilage, and here the second sound is clear. It is not heard in the back.

MENINGOCELE TREATED BY PLASTIC OPERATION.

By A. W. Mayo Robson, F.R.C.S.,
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If guided by certain text-books, the surgical student might be led to think that the excision of a meningocele, either connected with the spine or the skull, is an operation so heroic as to be unjustifiable.

This is evidently a survival of the preantiseptic era and with certain reservations may be disregarded.

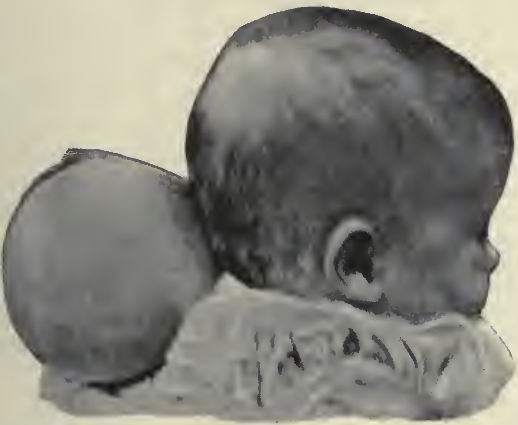
In a paper read before the International Congress at Rome and illustrated by a series of 20 cases, I stated my views very fully with regard to spina bifida, many of the cases related being examples of meningocele.

The only really serious difficulty in operating on a cranial meningocele is that occasionally a portion of the nerve-centres may be contained in the sac, but this may usually be diagnosed by careful palpation with or without a preliminary aspiration of the sac. At times this complication may be difficult to determine, as the cerebellar protrusion may be so small and so soft as to be with difficulty felt. This uncertainty need not, however, prevent an exploratory operation, for if after reflecting a flap of the integuments near the base of the tumor a small incision just large enough to admit the finger be made into the meningeal sac, this can be effectually closed if it be deemed unwise to proceed further with the operation. In a case of this kind I found the cerebellum lying in the sac and attached by a long pedicle. Not feeling justified in performing a physiological experiment by removing the cerebellum, I sutured the small incision by separate meningeal and skin sutures, and the child recovered, to be again brought by the mother three months later with a request that I would remove the tumor at all risks; which, however, after a consultation with my colleagues, I declined to do. In simple meningocele there is usually a distinct neck to the meningeal sac, which can be ligatured after the integuments have been dissected off; the skin-flaps can then be sutured separately, so that the ligatured neck of the sac lies out of the line of the superficial sutures.

In the cases in which I have operated primary union has been the rule, and recovery from operation has not only been satisfactory, but the after-development of the children has not been impaired.

The following case is a good example, and the illustration shows the size of the tumor dealt with :

FIG. 1.



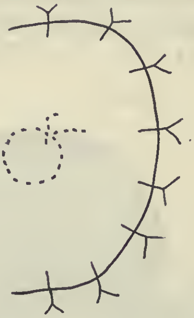
N. H., aged six months, in good general health and otherwise well developed, was brought to the General Infirmary at Leeds with the occipital tumor as shown in Fig. 1 ; the history being that at birth the swelling was only the size of an egg, and that it had increased rapidly, especially during the previous two or three weeks.

At first the swelling was pale on the surface, but of late it had become red and inflamed. On admission the tumor was translucent at the fundus, and the coverings were inflamed over an area of several inches, though the redness stopped short of the base of the swelling, which was very tense, the tension being increased when the child cried.

From the rapid increase in size, the attenuation of the coverings, and the inflammation of the fundus, it was quite manifest that unless curative measures could be adopted the end must come within a short time. Permission for operation was therefore asked and readily granted. The tumor was shaved and asepticized by 1 in 40 carbolic dressing, applied for a few hours before operating.

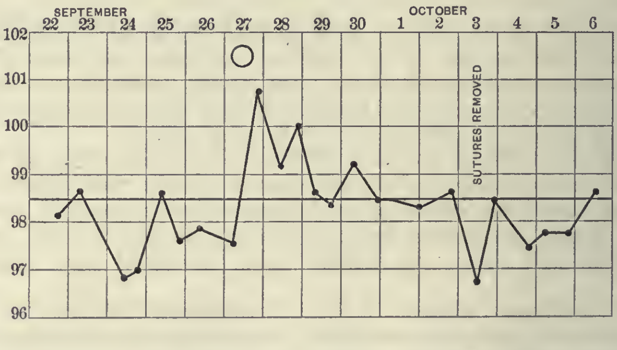
September 27th. A mixture of chloroform and ether was administered, and a curved incision made through the skin on the left side of the base of the tumor so as to form a flap; a small exploratory incision was then made through the meningeal wall of the sac, when fifteen ounces of clear cerebro-spinal fluid escaped; the finger was inserted, and it was found that the opening into the skull was quite free and about $\frac{1}{3}$ inch in diameter ; the skin-incision was therefore continued round the base and the meningeal pedicle freed, the latter was ligatured with a fine silk suture, and the tumor was removed by an incision just beyond the ligature, which was then cut short. The integumental flap was then brought over the pedicle and fixed *in situ* by silkworm-gut stitches.

FIG. 2.



The after-progress was perfectly satisfactory, as shown by the temperature-chart. The child took the breast soon after the operation, and apparently experienced no discomfort. The sutures were removed on the sixth day, when the wound was found to be healed, and the patient was discharged cured on the ninth day. When heard of some time afterward it was well and thriving.

FIG. 3.



This operation, I feel sure from ample experience, is one which can be recommended in a class of cases otherwise hopeless; but unless the operator is prepared to take every pains, both in the details of the operation and in the observance of antiseptic precautions, the older rule of non-interference had better be observed.

NOTES ON BACILLUS COLI COMMUNIS AND RELATED FORMS,

TOGETHER WITH SOME SUGGESTIONS CONCERNING THE BACTERIOLOGICAL EXAMINATION OF DRINKING-WATER.

(From the pathological laboratory of the Bureau of Animal Industry of the U. S. Department of Agriculture.)

By Theobald Smith, M.D.

In the following pages are brought together a number of forms belonging to the species *B. coli communis*, as well as a variety of closely related forms which have been the object of so much attention and discussion during the past few years. They have been studied as carefully as time permitted and certain general relationships outlined which may be of service to future systematists. Attention has been specially directed toward their behavior in fermentation-tubes containing sugar-bouillon. The sharp distinctions brought out by this procedure between many of these forms on the one hand and *B. coli* and *B. typhosus* on the other are, to say the least, a relief from the uncertainty of the usual potato-culture and the variable intensity of the indol-reaction. These distinctions are emphasized in the following pages not for the purpose of making them the sole basis of classification, but to call attention to the necessity of applying the fermentation-test more accurately than has been done hitherto. A careful perusal of these pages will, I believe, convince the reader that the ordinary means of determining the production of gas are all but useless in the differentiation of related forms.

In several former publications[1] the writer has pointed out the value of the reaction of bacteria in the presence of carbohydrates as a means of differentiation. This is now generally conceded. All that is needed is to apply this test more precisely. In the fermentation-tube, when carbohydrates are present, the diagnostic characters exhibited by bacteria are not exhausted by the production of gas. There should always be taken into consideration:

1. The evolution of gas as to (*a*) total quantity, (*b*) rate of accumulation, (*c*) approximate composition, (*d*) temperature most favorable.
2. Formation of acids.
3. Behavior toward different carbohydrates.

This scheme indicates on the surface a large amount of work. As a matter of fact, there is little more work involved than in the exhaustive study of an ordinary bouillon-culture. The handling of the tube itself requires a little more care, but if the various minor suggestions laid down in the article above referred to are heeded, no difficulty will be experienced.

The writer is fully aware of the fact that since his first publication on the use of the fermentation-tube much has been done in determining more fundamentally the changes induced in carbohydrates by bacteria.* The chemical work involved is too extensive, however, for the rapid differentiation of species and varieties. The fermentation-tube furnishes unequivocal characters promptly while permitting the comparative simultaneous study of a series of cultures with little trouble.

In the application of the test with bouillon containing carbohydrates other than the most easily attacked glucose or dextrose a difficulty arises which hampers us to a certain extent. Most beef (and the flesh of other animals as well) contains a fermentescible substance acting like dextrose. In testing with dextrose this does not interfere. When, however, other sugars are to be employed only that bouillon should be used in which gas does not appear during the multiplication of some gas-producing bacterium. The dextrose free beef I have encountered in about one-fifth of the beef purchased. Recently I have found the flesh from cattle in advanced stages of tuberculosis, those that show signs of emaciation, free from sugar. Such bouillon should be set aside and used only with saccharose, lactose, or other sugars, excluding dextrose. Beef placed in boiling water immediately after slaughter has also been found free from fermentescible substances.

The fermentation-tests referred to in this article were all made at the temperature of 36°–37° C., unless it is otherwise stated. This is important, as the amount of gas produced varies with the temperature. This may be most abundant at 37° C., or at 20°–25° C., according to the species under observation. With *B. coli* the higher temperature is the most favorable. With some related forms it is the lower temperature. This is illustrated by some observations recorded in the tables.

The use of the fermentation-tube may be briefly summarized in the following steps:

1. The preparation of peptonized beef-broth in the ordinary way.
2. The preliminary test for sugar in two or three fermentation-tubes with *B. cloacæ*.†
3. If found producing gas, it may be used for dextrose-, but not for saccharose- or lactose-bouillon. Should other bouillon be not at hand, it may be used with other sugars, provided the species to be studied is tested in the bouillon containing no added sugar and the quantity of gas produced carefully noted and deducted from the total gas produced after sugars have been added.
4. The sugars should be added in the proportion of one per cent.

THE COLON-GROUP.

The importance of *B. coli communis* in pathology has been insisted upon for some years past. The frequent isolation of colon-bacilli from the diseased human and animal body is sufficient to account for this attitude. It has been claimed to be the cause of typhoid fever, diarrhœal diseases of infants and adults, various affections of the urinary tract, and peritonitis. In animals it has been regarded as the cause of abortion in cows, Texas fever, septicæmia in fowls, and has been confounded with the hog-cholera group of bacilli.

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* For some of the literature on this subject see (1).

† See table on pages 298 *et seq.* Nos. 34, 35, and 36.

Whether the colon-bacillus is or is not the cause of some of the lesions with which it has been found associated is not to be answered at the present time, nor does it require an answer or even a discussion in this place. It is sufficient to note that it frequently penetrates into the body during life to induce us to treat the group with a certain dignity which it does not deserve otherwise.

Its relation to hygiene is defined by its frequent presence in water. For a number of years the writer has regarded the presence of *B. coli* in water as a valuable indication or symptom of pollution. This indicator has been looked upon by some as of little value. How far the one or the other position shall prove to be the acceptable one future work must decide.* Arguments for or against the significance of the colon-group both in the body and in water can only be properly dealt with when all shall have agreed upon what is to be called *B. coli communis* and when the related forms shall have been assigned to their proper place. It is one of the main objects of this paper to suggest a standard and to stimulate further research into intestinal bacteria in accordance with this standard until we know definitely what species or varieties are true inhabitants of the digestive tract and what species are there temporarily and really belong elsewhere.

The distinguishing characters of *B. coli* have been presented by different writers in different ways. Having been studied mainly in comparison with the typhoid bacillus, its characters have been defined with the latter as a standard. Other things being equal, *B. coli*, according to Escherich, produces gas in solutions of sugar and coagulates milk. C. Fräukel considered it non-motile. Chantemesse and Widal looked upon the gas-production in lactose-bouillon as diagnostic. Kitasato regarded the indol-reaction as an important differential character. It would be going wholly beyond the scope of this paper to discuss all the writings upon the colon-group. Only those can be noticed which bear directly upon the subject of the paper.

Achard and Renault,[3] in endeavoring to differentiate bacteria of this group, obtained from the urinary tract, tried the method of sowing one form upon a substratum which had previously served for the growth of another form. If development took place, the forms were regarded as belonging to different types. By this procedure five types were found. These types varied furthermore in their behavior in lactose-bouillon and milk and toward the indol-test.

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* The fact that *B. coli* is an even more prolific inhabitant of the intestines of certain domestic animals (determined by the writer in a series of unpublished studies in 1889 and 1890, and since then by others[2]) does not destroy the value of *B. coli* as an indicator of fecal contamination, for hygiene has no justification whatever for considering the intestinal contents of the higher mammals and birds as entirely harmless to man.

The criterion thus established by these authors seems scarcely to deserve the importance attached to it. That it may serve as one of the means of differentiation cannot be gainsaid. Yet it should be borne in mind that a slightly increased sensitiveness to acids or alkalies may be at the bottom of this criterion, a sensitiveness which may be variable among the varieties of the same pathogenic species.[10]

Gilbert and Leon,[4] in endeavoring to group colon-bacilli, paid special attention to their motility, their behavior in lactose-bouillon and in milk, and toward the indol-reaction. They discuss quite thoroughly the application of these tests, and point out gradations in the intensity of the indol-reaction. They fail, however, with all other observers, to perceive that colon-bacilli are all active when examined from young surface-colonies in gelatine. They conclude by describing the type colon-bacillus as a motile, non-liquefying bacillus, giving a rich yellow growth on potato, fermenting lactose-bouillon, coagulating milk, and giving the indol-reaction.

This definition covers the ground very well, and includes the two varieties—one fermenting saccharose, the other not, as defined by the writer in the following pages. It should be stated, furthermore, that with some varieties of potato no growth may appear in the thermostat. Again, the fermentation-reaction in lactose-bouillon is inadequate, and the definition of the species as given by these writers is saved from total wreckage by the addition of the positive indol-reaction, as may be seen by an examination of the tables given below.

Perhaps the most exhaustive study of bacilli resembling *B. typhosus* and the colon-group was made by Germano and Maurea[5] in Kruse's laboratory. These authors made use of a variety of tests, including the observation of motility, behavior in jequirity solution, litmus whey, production of alkali in peptone-bouillon, reducing action, the Gram stain and the gas-production in 2 per cent. glucose-, saccharose-, and lactose-agar. This painstaking work, in which 100 cultures are submitted to these tests, does not aid us in defining the different varieties of the colon-group, but simply in distinguishing them from the typhoid bacillus. In the published list there are fifteen forms (several are cultures of *B. typhosus*) producing no gas in any sugar, thirty producing gas in three sugars, nineteen producing gas in glucose- and lactose-agar, and one producing gas only in glucose-agar. The rest are characterized indefinitely as producing a little or a moderate quantity of gas in one or the other of the agar-tubes. This might be traced to muscle-sugar in some cases in which bubbles appeared in saccharose- and lactose-agar. The total quantity of gas produced and the relative amount of CO_2 are, of course, not determinable in agar. An important character, namely, the reaction of the sugar-agar when gas is not formed, is not given. This important work is not criticised for what is determined in it, but only for what might have been found out with little extra trouble concerning the colon-group.

Fremlin[6] in comparing colon-bacilli from different sources employs glucose-bouillon only. The motility is also not well defined.

Ury[7] examined *B. coli* and the bacillus of Friedländer, and comes to the rather antiquated conclusion that they are different.

Beckmann[8] finds in ground-water not exposed to pollution typhoid-like bacilli which ferment glucose and coagulate milk after a variable period. These are called *B. coli.* They might as well be ranged under *B. cloacæ* so far as the meagre description goes.

In order to establish a type-species of *B. coli communis* I would suggest that those forms be regarded as true to this species which grow on gelatine in the form of delicate bluish or more opaque whitish expansions with irregular margin, which are actively motile when examined in the hanging drop from young surface-colonies taken from gelatine plates, which coagulate milk within a few days; grow upon potato either as a rich-pale or brownish-yellow deposit, or merely as a glistening, barely recognizable layer, and which give a distinct indol-reaction. Their behavior in the fermentation-tube must conform to the following scheme:

Variety *α*. One per cent. dextrose-bouillon (at 37° C.).

Total gas, approximately 1/2; H/CO_2 approximately 2/1; reaction strongly acid.

One per cent. lactose-bouillon:

As in dextrose-bouillon (with slight variation.)

One per cent. saccharose-bouillon:

Gas-production slower than in the preceding, lasting from seven to fourteen days. Total gas finally about 2/3; H/CO_2 nearly 3/2. The final reaction in the bulb may be slightly acid or alkaline, according to the rate of gas-production.

Variety *β*. The same in all respects excepting as to its behavior in saccharose-bouillon. Neither gas nor acids* are formed in it.

In the table *B. coli α* and *β* from a variety of sources are represented. One of them (No. 14) did not give the indol-reaction, and is therefore, strictly speaking, to be ranged under another variety. Besides these a number of other provisional groups are included in the table, which, with the exception of the *B. lactis aërogenes* group, might be regarded as belonging either to the colon-group or to the typhoid group. The colonies on gelatine are all of the coli type, and all are actively motile forms of about the same size. They were included in the table because the ordinary microscopic and cultural characters failed to distinguish them from these two types. Before referring briefly to the salient features of these intermediate forms, it is desirable to point out once more briefly the fundamental difference between *B. coli* on the one hand and the large hog-cholera group (including *B. enteriditis* and *B. typhi murium*) and the typhoid bacillus on the other. The fermentation-reaction of the hog-cholera group (16a of the table) is as follows:

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* Throughout this publication an acid reaction signifies the distinct reddening of litmus-paper not changed by the drying of the paper or the boiling of the fluid. The reaction of the open bulb of the fermentation-tube is referred to.

One per cent. dextrose-bouillon: total gas 1/2; H/CO_2 2/1;* strongly acid reaction; 1 per cent. lactose-bouillon: no gas or acids; 1 per cent. saccharose-bouillon: no gas or acids.

The hog-cholera bacillus, while identical with *B. coli* in its behavior in dextrose-bouillon, differs wholly from the latter in having no effect on lactose (and milk) and saccharose.

The typhoid bacillus (28a) differs from both:

One per cent. dextrose-bouillon: no gas, markedly acid reaction;† 1 per cent. lactose-bouillon: no gas, no acid reaction;‡ 1 per cent. saccharose-bouillon: no gas, no acid reaction.

The use of lactose-bouillon alone is not sufficient as a distinguishing character between typhoid and pseudo-typhoid forms, for the whole hog-cholera group and many other forms fail to act upon lactose.

BACILLI RESEMBLING B. COLI COMMUNIS.

A species which is of considerable interest is No. 16:

Bacilli morphologically like *B. coli,* in active motion when taken from fresh gelatine surface-colonies and examined in water. On potato a yellowish deposit or none, according to the potato used. Milk coagulated in about eight days. The reactions in sugar-bouillon are as follows:

Dextrose-bouillon, identical with *B. coli.*

Saccharose-bouillon, no action.

Lactose-bouillon, *no evolution of gas, but markedly acid reaction.*

This species thus lacks the power to evolve gas in lactose-bouillon, though it still retains the power to form acids from the sugar, and hence to coagulate milk.

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* The figures are throughout this article to be regarded as merely approximate. Slight variations in the quantity of gas produced may occur in parallel cultures of the same organism.

† The action of this bacillus on dextrose is usually not recognized because gas is not formed. As pointed out by Peré[9], it forms acids from dextrose sufficient to coagulate milk. Anyone may try this by adding some sterile dextrose solution to milk and inoculating with the typhoid bacillus. Within a week the milk will be solid.

‡ In a former article (*Centralblatt f. Bacteriologie,* xi. 367) I stated that the reaction of saccharose- and lactose-bouillon inoculated with typhoid-bacilli is transiently acid. This is an error due to the use of bouillon not free from muscle-sugar. A transient acidity in such bouillon is common to a large number of bacteria.

A slightly aberrant group of apparently wide distribution, as I have frequently encountered it in well-water, is the following (Nos. 17, 18, and 19):

Bacilli in form, size, and motility like *B. coli.* Surface-colonies on gelatine plates differ slightly from those of *B. coli* (but not invariably) in the earliest stages of growth. They are roundish, slightly convex patches, with peculiar radial, linear markings on the disk, which now and then remind one of hair combed from a central point outward. These markings may disappear partly or wholly under artificial cultivation. In the later stages of growth these colonies expand into irregular patches not distinguishable from those of *B. coli.* Milk is coagulated in four or five days. On potato growth may be yellowish or not recognizable (tested but once). The fermentation-reaction is peculiar:

Dextrose-bouillon: no evolution of gas; reaction acid.

Saccharose-bouillon; no evolution of gas; reaction unchanged.

Lactose-bouillon: gas approximately 1/2; H/CO_2, 2/1 or 3/1.

This species has thus no power to produce gas in dextrose-bouillon, and in this respect resembles the typhoid bacillus. It fails to act upon saccharose. In lactose-bouillon its behavior is practically like that of *B. coli.* To this statement one exception must be made. The gas appears quite tardily. The earliest bubble does not appear for several days, and may be delayed nearly a week. With *B. coli* most of the gas appears within twenty-four hours, and all within three or four days. In one of these forms, the only one tried, multiplication on potato appears to be more vigorous at 20° to 25° than at 37° C. Fermentation-tubes should be kept at least a week before they are rejected in order that the retarded appearance of gas may not be overlooked.

This species would come under the designation of *B. coli* if judged according to standards hitherto employed. It coagulates milk and produces gas in lactose-bouillon, the fluid chosen by Chantemesse and Widal. But besides its different behavior toward dextrose it does not produce indol. Its occurrence as an intestinal form has not been demonstrated, nor can it be correlated with forms already described until the gas-test is more thoroughly applied.

TRANSITIONAL FORMS.

In the table a number of cultures are thus designated, because they stand near to those forms already described in their behavior toward sugars, or else because they approach the pseudo-typhoid and the true typhoid bacilli in producing either a very little or no gas.

Thus, No. 20 is morphologically like *B. coli*, but its colonies have the markings of the preceding group in the earliest stages. Milk is coagulated in five days. On potato an abundant straw-colored layer is formed. In dextrose-bouillon it produces only a little gas at 37° C., and becomes distinctly acid. Upon saccharose it has no effect. In lactose-bouillon the reaction becomes strongly acid. When the fermentation-tubes are kept in the laboratory temperature the gas formula changes materially. This suggests that a lower temperature is the more suitable for this species.

No. 21 is also a peculiar species as regards the gas-test. The gas formulæ at 37° C. and at 20° to 25° C. are quite different from each other.

No. 22 stands very close to the hog-cholera group. The behavior in lactose-bouillon, in which a little gas is set free, is significant as marking the dividing-line, for I have never observed even a trace of gas in the hog-cholera group. It will be noticed that the action on milk-sugar is too feeble to produce any change in milk.

No. 23 is identical with the group described above (Nos. 17–19) in producing gas only in lactose-bouillon. It acts upon the other sugars also in producing acids. While it resembles these forms in some characters it differs from them in others (non-motility, fleshy form of colony) and approaches the lactis aërogenes group.

Nos. 24 and 25 form a distinct group as regards the gas-reaction, but differ from each in their behavior in milk and toward the indol-test. The colonies resemble those of *B. coli* for a time. Later on, the margin of the expanded surface-colony becomes quite regularly scalloped.

PSEUDO-TYPHOID BACILLI.

These are naturally of much interest, as they resemble typhoid bacilli in not producing even a trace of gas in sugar-bouillon. Three of these were isolated (Nos. 26, 27, and 28), and these differ from each other in certain characters.

No. 27 resembles *B. coli* in the form, size, and motility of the bacilli. On gelatine-plates the surface-colonies expand into patches of irregular outline. In the earlier stages of growth both deep and surface colonies may have strands of wavy lines running radially across the disk. These are not constant, however. Bouillon becomes quite turbid. Milk is not changed after one or more weeks in the thermostat, but is coagulated when boiled.

On potato the growth varies. In the thermostat no growth appears. In the temperature of the laboratory, however, an abundant, colorless, glistening growth appeared after some days, distinguished from the now rosy-colored potato only by the relief and the glistening. Gas is not evolved. The reaction in dextrose-bouillon is pronouncedly acid, in lactose-bouillon feebly so, and in saccharose-bouillon alkaline.

No. 26 differs from the preceding form in some respects. The colonies have no characteristic markings; *i. e.*, they resemble *B. coli* closely. The growth on potato is yellowish or cream-colored, and the reaction of saccharose-bouillon acid.

No. 28 stands nearest to the true typhoid bacillus. It was isolated from a city well, the bacteriological examination of which did not indicate much, if any, fecal contamination. The colonies of this form expand like those of *B. coli.* A visible growth on potato was not observed at 37° C. The behavior in bouillon containing the three sugars is identical with that of the true typhoid bacillus; *i. e.*, there is no gas formed, and the reaction of the dextrose-bouillon only becomes acid. Milk-cultures remain unchanged even after boiling.

This form differs from the genuine typhoid bacillus in a more vigorous growth in gelatine and in a much less persistent motility in culture-fluids. In bouillon a cohesive condition of the deposit was noticed after one or more weeks. That this form is not the recognized typhoid bacillus may thus be conceded. However, it would be impossible to state that it may not be one of the varieties of this pathogenic species. The study of such varieties, if any exist, is, in spite of the work of Babes, still in its beginnings. If the writer were to use his experience gained in the study of a closely related group of pathogenic organisms, he should say that No. 28 could not be positively excluded from the genuine typhoid bacilli, since variations within the hog-cholera group itself have been found to be quite wide.[10]

B. LACTIS AËROGENES.

The failure on the part of many observers to note the motility of *B. coli* has led to the confusion of this group with the *B. lactis aërogenes* group. The latter is frequently referred to in bacteriological publications, and appears to hold the same enviable position with *B. coli* in the production of various forms of disease. This group should, therefore, be subdivided, and the various forms, brought together under it, defined more rigidly. That there is ample reason for such differentiation is shown below.

The cultures which I have regarded as coming under this group are non-motile bacilli, distinctly plumper and perhaps a trifle shorter than *B. coli.* In young cultures they are mere ovals. The surface-colonies on gelatine-plates are distinguished from those of *B. coli* in being fleshier, slightly convex, and having smooth, abrupt borders. They are, in other words, distinctly disk-shaped, and when allowed to expand fully in gelatine rolls protected from drying they frequently appear like lids provided with a central knob. The colony is not cohesive. The platinum needle readily breaks it up. This is due to the existence of a distinct capsule, or at least capsular substance usually recognizable on the border of the hanging drop by a regular spacing of contiguous bacilli. When roll-cultures stand upright the large colonies may flow partly down the sides of the tube and raise the suspicion that the gelatine is being slowly liquefied, which is not the case.

These bacilli are all gas-producing, and the formulæ vary considerably. Thus, for No. 29 the gas formulæ for dextrose- and lactose-bouillon are precisely like those for *B. coli.* Neither gas nor acids appear in saccharose-bouillon. On potato a rich, yellowish growth is formed. Milk is firmly coagulated in a few days. The indol-reaction is positive. Were it not for the morphology this bacillus would be ranged under *B. coli.*

A species represented by Nos. 31, 32, and 33 is quite different from the preceding in its physiological characters. It ferments the three sugars and starch. On potato there is formed an exceedingly rich pale-yellow or ashen growth, not cohesive. The potato becomes much discolored, and gas bubbles may appear. Milk is coagulated promptly in twenty-four to forty-eight hours. The gas-production differs from that of any of the species described. In dextrose-bouillon the total gas is 5/6 to 6/6; *i. e.*, up to 100 per cent. The ratio H/CO_2 is nearly unity, the volume of hydrogen slightly predominating. The acid reaction is feebler than in the colon-group. When the fermentation is somewhat retarded the open bulb may be alkaline after the close of the fermentation. When gas collects more rapidly the reaction does not become alkaline. The gas-reaction for saccharose and lactose is the same as that for dextrose. The gas-reactions for starch have not been studied.

A slightly aberrant form (No. 30) was found in spring-water, and perhaps derived from the manure of animals frequenting it. The potato-growth is identical with that of the preceding, but the coagulation of milk proceeds more slowly, not being completed for five or six days. The gas-reactions are likewise different, approaching those of the colon-group:

In dextrose-bouillon, total gas 1/3; H/CO_2 3/1; reaction acid.
In lactose-bouillon, total gas 11/12; H/CO_2 3/2; reaction acid.
In saccharose-bouillon, total gas 2/3; H/CO_2 2/1; reaction acid.

From these figures it will be seen that the total gas-production is less and the relative amount of hydrogen greater than in the preceding species. Here, again, is illustrated the fact frequently noted by the writer that where gas is evolved the intensity of the acid reaction is proportionate to the relative amount of hydrogen set free.

Forms similar to the members of the group as described above were encountered in the intestine of the pig, and have been compared among themselves and with B. Friedländer in a former publication.[11] * The same variations are there noted. The gas-reactions as given are not strictly correct, however, as the bouillon used was not free from muscle-sugar.

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* Denys and Martin have made similar comparative studies recently: Sur le rapport du pneumo-bacille de Friedländer, du ferment lactique et de quelques autres organismes avec le *B. lactis aërogenes* et le *B. typhosus.* La cellule ix. (1893) p. 261. (The original not obtainable by the writer.)

A peculiar form already referred to is represented by No. 23 of the table. It possesses the morphological character of the lactis aërogenes group in being short, plump, and non-motile, and provided with a capsule or at least capsular (zooglœar) substance, recognizable in masses of bacteria from a colony. The latter is fleshy, round, grayish-white, and not viscid. Milk is coagulated in two or three days. On potato its growth remains invisible. It produces gas in lactose, but not in glucose or saccharose bouillon. These fluids are made distinctly acid, however. The type of gas-production in lactose-bouillon is like that of *B. coli*.

Before concluding this portion of the work it is desirable to call attention to a species very frequently encountered, by the processes given below, in surface- and well-water polluted as well as unpolluted. This species is represented by Nos. 34, 35, and 36 of the table. These bacilli are perhaps a trifle smaller than *B. coli*, and more nearly resemble the hog-cholera group. Their motility is more persistent than that of *B. coli*. They differ from the latter in some important characters. They slowly liquefy gelatine, the gas-reaction is wholly different, and indol is not produced. Nevertheless, they may be mistaken for *B. coli* in hurried determinations, because the liquefaction on plates owing to its retarded appearance may be entirely overlooked if the plates are allowed to dry out rapidly. Even in gelatine-tubes the liquefaction may not appear in one or two weeks. If, moreover, agar be used with the various sugars in place of the fermentation-tube the peculiar gas formula will not be recognized, and the chances of error in diagnosis increased. From the table it will be noticed that in dextrose- and saccharose-bouillon the gas drives out the fluid almost entirely, and the CO_2 always predominates over the hydrogen. The gas formula in lactose-bouillon is variable, owing to the slow accumulation of gas. V. A. Moore[12] has found this species (or group) frequenting rusty spots on Indian corn. This fact strengthens the hypothesis held by the writer that the habitat of this species is vegetation, living and dead.

A few words may be added here concerning the correlation of certain culture-tests, such as that of lactose-bouillon and milk. It may be laid down as a general rule that if acids are produced in the former the latter will be coagulated either spontaneously or after the application of heat. Both tests are necessary to supplement each other. The lactose-bouillon informs us whether any acids are produced, the milk the intensity of acid formation. This may vary somewhat even for the same culture, and the production of acids in milk may be overlooked unless lactose-bouillon be used at the same time. In a recent study of a mouse septicæmia (or swine erysipelas) culture the writer was led to assume that this culture might coagulate milk because it invariably produced a pronouncedly acid reaction of lactose-bouillon. Several tests in milk showed that when the cultures were boiled they might or might not become coagulated. This variability may depend on the initial acidity of the milk or upon the vigor of the culture used.

The variable behavior of potatoes as culture-media has been the subject of such frequent comment that I may well pass it by, noting simply the fact that the potato may be utilized to test the action of bacteria on starch. The permanence of the acid reaction (especially of the water in the tube) may at least for the present be regarded as a sign that starch is being split up. If the potato-cylinder fits snugly into the test tube and dips into the water, any gas bubbles formed will become imprisoned between the potato and the sides of the tube. The cultures No. 31, 32, and 33 are evidently gas-producers in the presence of starch. This phenomenon may be witnessed by adding starch to glucose-free bouillon in the fermentation-tube before final sterilization. Gas-production from starch is also a property of the *B. cloacæ* group.

The brief sketch which I have given of a variety of forms which may be mistaken for *B. coli* shows that the fermentation-test must be applied at least as fully as I have used it in order that the colon-bacillus may gain more relief and distinctness. It is evident that the simple determination of gas-production in sugar-agar is wholly insufficient owing to the great variety of gas-producing bacteria. It is furthermore clear that neither lactose nor glucose bouillon by themselves define anything, and that at least the three kinds of sugar-bouillon must be used together. For the more accurate subdivision of saprophytes it will be necessary to extend the test to starch, and, perhaps, other carbohydrates, as has been done more especially by Frankland and those working under Duclaux.

The objection occasionally urged that bacteria lose the power of gas-production during artificial cultivation I have already met in a former publication[1] with convincing illustrations. At this date I have no reason to change the views expressed elsewhere that gas and acid-production are too fundamental characters to be lost. The effect of cultivation on gas-production for some groups is *nil*, for others the rate and quantity may suffer somewhat, but the production does not disappear. For a small number (Nos. 24 and 25 of the table), in which the amount of gas set free, when the bacteria were first isolated, was very small, the gas may or may not appear subsequently, according to partially known conditions, one of which is temperature. Such forms are probably transitional, whose acid-formula should be carefully studied. The amount of gas set free may vary slightly with the construction of the fermentation-tube, and the condition of the culture from which the tubes are inoculated. If this be old, partially dried out, there may be considerable variation in the total amount of gas. If, on the other hand, only fresh cultures are used, the variation from tube to tube is very slight. This may account for the statements now and then made of the inconstancy of gas-production, statements which may probably be refuted by one passage of the culture through fresh media. In all these cases of temporary variation the formula H/CO_2 remains remarkably constant.

Besides the production or non-production of gases the appearance or non-appearance of acids in bouillon containing sugars merits our attention as of equal importance. Bacteria may produce acids with or without the evolution of gas, or they may leave the sugar untouched, in which case the reaction remains alkaline. The acid may be produced so slowly that it is masked by the alkaline tendency of bacteria in active multiplication. To this phase of the subject the writer hopes to return at some future date. It is in general sufficient to take the reaction of the fluid in the open bulb, as well as in the closed branch, before the tube is rejected, to cover all cases. In the table only the reaction of the open bulb is given.

The behavior of bacteria toward sugars in nutritive media is most probably a slow physiological adaptation to environment which affects a great variety of morphologically distinct forms and brings them nearer together. Hence it may be a guide to habitat and function rather than to descent. It is this adaptation which has probably brought members of the lactis aërogenes group so close to those of the colon-group that they have been considered as identical.* For the purposes of bacteriology, as applied to pathological and hygienic problems, it seems that the grouping according to function and bio-chemical activity is of most importance.

THE ISOLATION OF B. COLI COMMUNIS FROM WATER.

It has been the not unreasonable hope of bacteriology to find processes capable of revealing specific disease germs in water. While this problem may be regarded as solved in case of the spirillum of Asiatic cholera, it is far from solution in case of typhoid bacilli. Realizing for some years past the difficulties inherent in this problem on account of the presence of the colon-group in polluted water, I turned my attention to the latter as of possible use as an indicator of pollution. But even the detection of *B. coli* in ordinary gelatine-plates made from a small quantity of water is, as a rule, not possible, for the more contaminated a given water the richer the bacterial flora, which grows more rapidly than *B. coli* and soon liquefies the gelatine. Other special devices must therefore be brought into requisition. These are in the main the outcome of studies designed to reveal the presence of typhoid bacilli in water, and hence a brief reference to the latter will not be out of place.

Vincent[13] claims to have succeeded in finding typhoid bacilli, as well as colon-bacilli, by adding water to carbolized bouillon and cultivating the mixture at 42° C. Several passages may be necessary. Foote[14] recommends agar-plates in which most bacteria are suppressed at 37° C. Wurtz[15] recommends agar to which lactose has been added, and which has been tinged with litmus. The colonies upon such a plate divide themselves into two great groups, those which act upon lactose, produce acids from it, and change the color of the colony to red, and those which fail to act upon lactose, and hence leave the blue color unchanged. The colon-bacilli will be found among the former, the typhoid bacilli among the latter. The great utility of this simple process has been strongly urged by Mathews[16] when the problem is to search for typhoid bacilli. Its usefulness in the quantitative estimation of fecal bacteria will be better known after the nature of the red colonies has been more exhaustively studied.

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* See No. 29 of the table.

The difficulty of finding typhoid among colon-bacilli by the bouillon-method paves the way for the not unjustifiable suspicion that the frequently reported discovery of typhoid bacilli may have been in perhaps all cases the finding of pseudo-typhoid or colon-bacilli. This suspicion is voiced very recently by Grimbert,[17] who admits that it is impossible to find typhoid bacilli in the presence of the far outnumbering colon-bacilli. The writer some years ago found it impossible to isolate typhoid bacilli added directly to unsterilized water containing at the time about 300 bacteria in a c.cm.

The colon and related bacilli referred to in the table as coming from water were isolated according to two methods based upon that suggested by Rodet and G. Roux, and modified by Vincent. To flasks of bouillon containing about 100 c.cm. 50 c.cm. of water were added, the mixture quickly warmed and placed at 37° C. After sixteen to twenty-four hours gelatine-plates were made, and rarely more than one species found. When membranes appeared on the bouillon the flask was tilted and the fluid for the plates taken from the deeper layers. By this precaution *B. subtilis* and other liquefying bacilli were avoided. Carbolic acid was not added to the bouillon. The other similar process consisted in adding a small quantity of water to each one of a series of fermentation-tubes containing glucose bouillon and placing them in the thermostat.[18] The amount of water added depended on the probable amount of pollution, and varied from 0.1 to 1, or even more c.cm. If, after two or three days, any tube indicated the presence of *B. coli* by the quantity of gas formed, and the rate of evolution, plates were made from the deposit. Usually but one species, *B. coli*, appeared; sometimes two were found on the plates.

One objection to this method is the rapid destruction of bacteria in the strongly acid bouillon. Unless the isolation is attempted within a week, the fermentation-tube may be found sterile, or else some other spore-bearing bacillus taking the place of the colon-bacilli on the plate. These two methods have been used, since 1891, by the writer with much satisfaction. The second has been adapted to the quantitative determination of the colon bacilli. If, for example, 0.5 c.cm. of water be added to every one of a series of ten fermentation-tubes containing 1 per cent. dextrose, and if in two of these the colon-type of gas-production appears, we may safely conclude that there were two colon-bacilli in the 5 c.cm. used.

It may be urged that the presence of two or more gas-producing forms may mask the indications of the fermentation-tube. But gas-producing bacteria are not so numerous as a rule, and in exceptional cases a second test may be made with smaller quantities of water. A series of mixed infections made by inoculating the same tube with *B. coli* and some other gas-producing species has convinced the writer that in nearly all cases *B. coli* maintains its own type. This is probably due to the large amount of acid produced by *B. coli* in the dextrose-bouillon, which inhibits the growth of other species. The final strength of this acid appears to be equivalent, approximately, to 0.3 per cent. of normal acid, as determined by titration of potassium hydrate, when phenolphthalein is used as an indicator.

It will be noticed that stress is placed only upon the presence of *B. coli*. The widely distributed *B. cloacæ* is excluded, also those forms producing less gas than *B. coli*, among them *Proteus vulgaris*. This division may appear somewhat arbitrary; but it errs, if at all, on the conservative side. The gas-formulæ of regular inhabitants of the intestines other than those of *B. coli* are not yet studied, and until more is known of their relative abundance, as compared with *B. coli*, the ultimate value of the qualitative test cannot be estimated. Schardinger[19, 20] is inclined to look upon the presence of fermentative (*i. e.*, gas-producing) forms of all kinds in water as indicative of pollution. This is true if, by pollution, we mean filth of any kind. For the movement toward pollution, especially of surface-water, seems to begin with the appearance of gas-producers which steadily increase in numbers with the amount of pollution.

The wide distribution of the colon-group has led some writers to regard *B. coli* of little value as a symptom of fecal contamination. At present the tendency seems to be in the other direction, and more attention is being paid to processes designed to reveal its presence. Kleiber[21] in a recent article recommends the addition of 2 per cent. carbolic acid to the mixture of bouillon and water. Burri[22] adds 0.75 per cent. of dry sodium carbonate to the culture-fluids. The high temperature of the thermostat, coupled with the strong alkalinity, is designed to suppress all but colon bacilli. Burri rightly suggests that the detection of fecal bacteria in a large quantity of water may lead to the condemnation of really good water. It is for the same reason that I regard quantitative methods of importance, and consider the inoculation of a series of tubes of more service than the addition of a large quantity of water to bouillon in a single flask.

	No.	Source.	Form of surface-colony on gelatine.	Motility	Gas-reaction in fermentation-tube containing one per cent. sugar-bouillon.									Potato.	Milk coagulated.	Indol-reaction.	Remarks.
					Dextrose.			Lactose.			Saccharose.						
					Total gas.	$\frac{H}{CO_2}$	Re-action	Total gas.	$\frac{H}{CO_2}$	Re-action	Total gas.	$\frac{H}{CO_2}$	Re-action				
Bacillus coli communis.	1	River-water	Spreading	Motile	$\frac{5}{12}$	$\frac{2}{1}$	Acid	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	Yellowish	In 2 days	Positive	Nos. 1 to 8 inclusive produce gas in the saccharose. Nos. 9 to 15 inclusive do not produce gas in saccharose.
	2	Human feces.	Spreading	Motile	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	$\frac{1}{2}$	$\frac{2}{1}$	Acid	$\frac{2}{3}$	$\frac{4}{3}$	......	Yellowish	In 2 days	Positive	
	3	Human intestines.	Fleshier	Motile	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	$\frac{2}{3}$	...	Acid	$\frac{2}{3}$	$\frac{2}{1+}$	Acid	....	....	....	
	4	Liver of cow	Fleshier	Motile	$\frac{7}{12}$	$\frac{2}{1}$	Acid	$\frac{7}{12}$	$\frac{2}{1}$	Acid	$\frac{5}{6}$	$\frac{6}{5}$	Alk.	Yellowish	In 2–3 days	Positive	Cultures Nos. 4 and 9 were obtained, together with a streptococcus, from the liver of a case of parturient apoplexy.
	5	River-water	Spreading	Motile	$\frac{1^*}{2}$ $\frac{1}{3}$	$\frac{2}{1+}$ —	Acid	$\frac{7}{12}$ $\frac{1}{3}$	$\frac{3}{1+}$ —	Acid	$\frac{7}{12}$ $\frac{1}{3}$	$\frac{3}{2}$ —	Acid	Yellowish	In 1–2 days	Faint	
	6	Well-water	Spreading	Motile	$\frac{1}{2}$	$\frac{3}{1+}$	Acid	$\frac{2}{3}$	$\frac{2}{1+}$	Acid	$\frac{7}{12}$	$\frac{3}{2}$	Alk.	No distinct growth	In 2–3 days	Positive	
	7	Human feces.	Spreading	Motile	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	$\frac{1}{2}$	$\frac{2}{1}$	Acid	$\frac{2}{3}$	$\frac{4}{3}$	......	Yellowish	In 2 days	Positive	
	8	River-water	Spreading	Motile	$\frac{1}{2}$	$\frac{2}{1}$	Acid	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	$\frac{2}{3}$	$\frac{2}{1+}$	Alk.	....	....	....	
	9	Liver of cow	Spreading	Motile	$\frac{1}{2}$	$\frac{9}{5}$	Acid	$\frac{7}{12}$	$\frac{5-}{3}$	Acid	0	0	Alk.	Yellowish	In 2–3 days	Positive	
	10	River-water	Spreading	Motile	$\frac{2}{3}$	$\frac{3}{2}$	Acid	$\frac{7}{12}$	$\frac{2}{1}$	......	0	0	Alk.	Yellowish	In 1–2 days	Positive	
	11	River-water	Fleshy	Motile	$\frac{1}{2}$	$\frac{2+}{1}$	Acid	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	0	0	Alk.	Yellowish	In 2 days	Positive	
	12	River-water	Spreading	Motile	$\frac{7}{12}$	$\frac{2}{1+}$	Acid	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	0	0	Alk.	No distinct growth	On boiling only	Positive	In a second test milk coagulates in four to five days.

* Where two sets of gas-reactions are given, the upper series refers to the temperature of 37° C., the lower to that of 20° to 25° C.

	13	River-water	Spreading	Motile	$\frac{1}{2}$	$\frac{2}{1}$	Acid	$\frac{7}{12}$	$\frac{2}{1-}$	Acid	0	0	Alk.	No distinct growth	In 2–3 days	Positive	Nos. 12 and 13 were isolated from the same sample. The surface-growth in gelatine stab-cultures of No. 12 became finely wrinkled and presented a ground-glass appearance, that of No. 13 remained smooth.
	14	Well-water	Spreading	Motile	$\frac{7}{12}$	$\frac{2}{1}$	Acid	$\frac{3}{4}$	$\frac{2}{1-}$	Acid	bub'le	—	Alk.	No distinct growth	In 2–3 days	Negative	
	15	Cattle	Spreading	Motile	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	$\frac{7}{12}$	$\frac{2}{1+}$	Acid	0	0	Alk.	…………	…………	Positive	
Transitional.	16	Well-water	Spreading	Motile	$\frac{1}{2}$	$\frac{2}{1}$	Acid	$\frac{0}{0}$	$\frac{0}{0}$	Acid	0	0	Alk.	Yellowish	In 8 days	Negative	
	16*a*	Hog-cholera	Small	Motile	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	0	0	Alk.	0	0	Alk.	Yellowish	Not coagulated even after boiling	Negative	
Pseudo-colon bacilli.	17	Well-water	Spreading	Motile	0	0	Acid	$\frac{1+}{2}$ bub'le	$\frac{2}{1-}$ —	Acid	0	0	Alk.	Yellowish	In 5 days	Negative	Potato-growth better at 20° C.
	18	Well-water	Spreading	Motile	0	0	Acid	$\frac{5}{12}$	$\frac{3}{1-}$	Acid	0	0	Acid	No distinct growth	In 5 days	………	
	19	Well-water	Spreading	Motile	0	0	Acid	$\frac{1}{2}$	$\frac{2}{1-}$	Acid	0	0	Alk.	No distinct growth	In 4 days	Negative	
Transitional forms.	20	Well-water	Fleshier	Motile	$\frac{1^*}{20}$ $\frac{5}{6}$	— $\frac{1}{1}$	Acid	0 $\frac{1}{20}$	— —	Acid	0 0	0 0	Alk.	Yellowish	In 5 days	Negative	Potato-culture made a year later shows whitish growth.
	21	Well-water	Spreading	Motile	$\frac{1}{6}$ $\frac{5}{6}$	$\frac{4+}{1}$ $\frac{1}{1}$	Acid Alk.	$\frac{1}{2}$ $\frac{5}{6}$	$\frac{2}{1}$ $\frac{1}{1}$, $\frac{15}{1}$	Acid Alk.	0	0	Alk.	Grayish or yellowish	In 4–5 days	Negative	
	22	Well-water	Fleshier	Motile	$\frac{1}{2}$	$\frac{2}{1}$	Acid	$\frac{1}{4}$ bub'le	—	Alk.	0	0	Alk.	Yellowish	Not coagulated on boiling	Negative	
	23	Well water	Fleshier	Not motile	0	0	Acid	$\frac{1}{2}$	$\frac{2}{1}$	Acid	0	0	Acid	No distinct growth	In 2 days	………	
	24	Well-water	Fleshier	Motile	$\frac{1}{5}$ $\frac{1}{4}$	—	Acid	$\frac{1}{5}$ $\frac{1}{6}$	—	Acid	$\frac{1}{5}$ $\frac{1}{6}$	—	Acid	…………	In 4–5 days	Positive	
	25	River-water	Fleshier	Motile	$\frac{1}{5}$ $\frac{1}{4}$	—	Acid	$\frac{1}{5}$ $\frac{1}{6}$	—	Acid	$\frac{1}{5}$ $\frac{1}{6}$	—	Acid	Straw color	Coagulated only on boiling	Negative	

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* When two sets of gas-reactions are given, the upper series refers to the temperature of 37° C., the lower to that of 20° to 25° C.

	No.	Source.	Form of surface-colony on gelatine.	Motility	Gas-reaction in fermentation-tube containing one per cent. sugar-bouillon.									Potato.	Milk coagulated.	Indol-reaction.	Remarks.
					Dextrose.			Lactose.			Saccharose.						
					Total gas.	$\frac{H}{CO_2}$	Reaction	Total gas.	$\frac{H}{CO_2}$	Reaction	Total gas.	$\frac{H}{CO_2}$	Reaction				
Pseudo-typhoid bacilli.	26	Spring-water	Spreading	Motile	0	0	Acid	0	0	Acid	0	0	Acid	Yellowish	Coagulated only on boiling	Negative	
	27	Well-water	Spreading	Motile	0	0	Acid	0	0	Acid	0	0	Alk.	Yellowish	Coagulated only on boiling	Negative	Growth on potato only at 20° C.
	28	Well-water	Spreading	Motile	0	0	Acid	0	0	Alk.	0	0	Alk.	No distinct growth	No coagulation even on boiling	Negative	
	28a	Typhoid	Spreading	Motile	0	0	Acid	0	0	Alk.	0	0	Alk.	No distinct growth	No coogulation even on boiling	Negative	
Bacillus lactis aërogenes group.	29	River-water	Fleshy	Not motile	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	$\frac{1}{2}$	$\frac{2}{1+}$	Acid	0	0	Alk.	Yellowish	In 4 days	Positive	Nos. 29–33 inclusive show capsules in the hanging drop (unstained); probably gas-production in solutions containing starch.
	30	Spring-water	Fleshy	Not motile	$\frac{1}{3}$	$\frac{3}{1}$	Acid	$\frac{11}{12}$	$\frac{3}{2}$	Acid	$\frac{2}{3}$	$\frac{2}{1}$	Acid	Whitish, abundant	In 5 days	Negative	
	31	Well-water	Fleshy	Not motile	$\frac{5}{6}$	$\frac{1}{1-}$	Acid or alk.	$\frac{5}{6}$	$\frac{5}{4}$	Alk.	$\frac{5}{6}$	$\frac{5}{4}$	Alk.	Creamy (gas)	In 1 day	Negative	
	32	Well-water	Fleshy	Not motile	$\frac{11}{12}$	$\frac{4}{5}$	Acid	$\frac{2}{3}$	—	Acid	$\frac{5}{6}$	$\frac{5}{4}$	Acid	Creamy (gas)	In 1 day	Negative or very faint	
	33	Well-water	Fleshy	Not motile	$\frac{1}{1}$	$\frac{1}{1}$	Acid	$\frac{3}{4}$	$\frac{3}{2}$	Alk.	$\frac{11}{12}$	$\frac{5}{4}$	Acid	Grayish	In 2–3 days	Negative or very faint	
Bacillus cloacæ.	34	Well-water	Spreading	Motile	$\frac{5}{6}$	$\frac{1}{2}$	Alk.	$\frac{6}{12}$	$\frac{5}{2}$	Alk.	$\frac{1}{1}$	$\frac{1}{2+}$	Acid	Yellowish	In 6–7 days	Negative	Nos. 34–36 inclusive liquefy gelatine very slowly.
	35	Well-water	Spreading	Motile	$\frac{11}{12}$	$\frac{1}{2}$	Acid	$\frac{5}{12}$	$\frac{2}{1}$	Alk.	$\frac{5}{6}$	$\frac{1}{2}$	Acid	Yellowish	In 5–6 days	Negative	
	36	Well-water	Spreading	Motile	$\frac{3}{4}$	$\frac{7}{8}$	Alk.	$\frac{3}{4}$	$\frac{7}{8}$	Alk.	$\frac{5}{6}$	$\frac{1-}{1}$	Alk.	Yellowish	In 3 days	Negative	

The method followed by the writer in the general bacteriological examination of water consists, first, in the preparation of gelatine-plates for the usual enumeration; and, second, in the addition to every one of ten fermentation-tubes, containing a 1 per cent. dextrose-bouillon, a certain quantity of water. This is added most easily by first diluting the water, so that 1 or 2 c.cm. are equivalent to the quantity which it is desired to add to each tube. Pipettes graduated by drops are convenient, but not so accurate. In case of ground-water it is well to prepare in addition a flask containing 50 to 100 c.cm. of the water, and an equal, or greater, quantity of bouillon, to which sugar is *not* added. Plates may be prepared from this flask after sixteen to twenty-four hours.* When gas begins to appear in the fermentation-tubes, the amount accumulated at the end of each twenty-four hours should be marked with a glass pencil on the tube. From these tubes, which contain 50 to 60 per cent. of gas on the third day, and are very strongly acid, plates may be prepared to confirm the indications of *B. coli.* This, however, is not essential, for the writer has found as yet no species having these fermentative characters which is not one of the following: *B. coli, B. lactis aërogenes, B. enteriditis, B. typhi murium, B. choleræ suis.* The three last-mentioned species are probably as rare in water as *B. typhosus* itself.

My own experience coincides with that of Mathews when he states that 92 per cent. of all bacteria in ground-water are suppressed in the thermostat. While the addition of 0.5 c.cm., or even more, of such water may fail to produce cloudiness in any of the series of fermentation-tubes, the same quantity, or less, of surface-water never fails to infect the tubes. This difference impressed itself upon me very forcibly in the comparative examination of Potomac water and of some wells in Washington. On one occasion water purporting to come from a well caused clouding of all the fermentation-tubes. This, I knew, was a characteristic of Potomac water in midsummer, when gas-producers are rare. In tracing the matter I found that the person sent to collect the sample had found on the spot designated a public hydrant supplying Potomac water, and had thoughtlessly taken the water from this.

In recommending the use of fermentation-tubes for the detection and isolation of *B. coli* I do not wish to convey the impression that it is to supersede other methods, as, for instance, that of Wurtz. This method is not directly adapted to give us information concerning *B. coli,* nor is it capable of utilizing large quantities of water, excepting by the use of many plates. On the other hand, the method suggested here wholly ignores the search for typhoid bacilli, and focusses our attention upon the strictly fecal species.

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* In the case of a certain spring in Washington 50 c.cm. failed to cloud bouillon in the thermostat.

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[17] *Grimbert:* Recherche du bacille d'Eberth dans l'eau. Compt. rend. Soc. de Biol., 1894, p. 399.

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February 21, 1895.

THE RADICAL CURE OF HERNIA BY OPERATION.[1]

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RECENT experience has made me more willing than formerly to attempt the radical cure of hernia by operation. I was much impressed in 1890 by the conclusions of Bull,[2] who found relapse frequent. My custom, therefore, has usually been to refuse to operate upon reducible hernias in young children unless the tumor was large. In adults I declined to operate unless the tumor, if reducible, was large or the seat of attacks of colicky pain; irreducible hernias, whether large or small, were often deemed suitable for operative interference, because of the danger of strangulation when surgical aid might not be obtainable. In strangulated hernias operated upon recently I have, after relieving the strangulation, undertaken to perform a radical operation for closing the ring if the condition of the parts and of the patient warranted such operation. Formerly I was content to relieve the strangulation by herniotomy, if taxis had failed.

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[1] Read before the Surgical Section of the College of Physicians of Philadelphia, December 14, 1894.

[2] Transactions of the American Surgical Association, 1890, p. 99.

Ventral hernias at the site of former abdominal sections were usually operated upon, because of the difficulty of relieving them by apparatus and the comparative ease of successfully closing the ring by operation. My opinion was that inguinal and femoral hernias were likely to recur after operation, and that it was wise to wear a truss after the wound had healed. I believed that a permanent cure was usually obtainable by retentive apparatus in hernia occurring in children, and that operation in them was therefore very seldom demanded.

Experience has lately taught me, however, that though some of these conclusions were and are still in the main correct, the opinion as to the probability of return needs modification, as does the belief that a truss should be worn after operation. I now believe that many cases are permanently cured, and that a truss is usually not needed after a properly performed operation.

My records, except those of the cases at the Woman's Hospital, are very imperfect; but I believe that in the comparatively limited number of operations performed I have had no deaths, except in two instances of very large umbilical hernia, and in one or two strangulated hernias. In one case a large umbilical hernia had opened spontaneously and discharged several quarts of pinkish fluid on two occasions a few weeks prior to the operation. At the time of operation the patient's temperature was persistently high, and foul discharge was escaping from the sinus in the sac-wall and from ulcers on the surface of the tumor. Operation was demanded by the condition. Death occurred from septic peritonitis.

In a second umbilical case the patient had an enormous hernia and a very large dislocated spleen lying in the *right* iliac region. She died from interference to respiration, due to the increased bulk of the abdominal contents after replacement of the hernial contents.

Cure is more often permanent after well-performed radical operations than I formerly believed. Relapses will, of course, occur; but so will they after cures by the truss. Many cases are never cured by a truss, which then becomes a necessary part of the patient's life, and may become ineffective at a time when surgical aid is unobtainable. A relapse after an attempted radical cure seldom causes a hernia as troublesome as the one operated upon unless it be allowed to go without proper mechanical support.

It is difficult to trace patients at a period long enough after operation to establish the question of cure, but some of my cases I have examined under such circumstances. As an example I quote the following somewhat unusual history:

Woman, aged sixty-five years. Very large labial epiplocele. Operation was performed in May, 1892. Silk suture applied to ring like shoelace. Post-operative insanity occurred. Violence of patient prevented proper care of dressings, and some suppuration occurred. A portion of suture was extruded as if edges of ring had sloughed from constriction. Patient examined two years and a half later. She states that a year subsequent to operation she had an abscess at seat of operation. She has worn a truss, weighs 200 pounds, and has a very pendulous abdomen. She has had no return of the hernia, and I found the canal well closed. I directed her to dispense with her truss.

A similar case in a male is this:

A patient, aged twenty-nine years, had large scrotal hernia on both sides. He had worn a double truss, but it had caused ulceration over both rings. Strangulation requiring etherization for taxis had occurred a few weeks before I operated. At the operation I isolated the sac, closed its neck and drew it upward through an opening in the aponeurosis of the external oblique muscle, twisted it and brought it down on the outside of the aponeurosis in the direction of the canal, according to the suggestion of Kocher. When examined about six months later the ring and canal were closed. I shall operate on the other side, as he finds it impracticable to wear a truss or is unwilling to do so. [This case had a return of hernia at upper part of scar when seen some weeks later than the reading of this paper.]

Results of the same kind are found in the following instances:

Woman, aged forty years. Irreducible femoral hernia. Operation May 25, 1892. Examined two years later. Has worn no truss. Ring closed and no return of hernia.

Woman, aged fifty years. Irreducible femoral epiplocele. Tumor painful and tender. Operation, April 7, 1893. A portion of fascia, dissected from pectineus muscle, was turned up and sutured to Poupart's ligament. Examined one year and eight months later. Has worn no truss. No return of hernia has occurred, though patient works hard and carries heavy articles without discomfort.

An illustration of a less satisfactory result, though the patient's condition is much better than before operation, is furnished by the following history:

Woman, aged thirty-two years. Operation, October 28, 1892, for irreducible femoral epiplocele. Examined two years and one month later. Slight evidence of bulging on coughing, but no tumor distinctly felt. Patient has worn truss since operation. Ordered to continue wearing truss.

I have operated for scrotal hernia in boys, the youngest being four months old, but have not been able to know the result after a long period of time had elapsed. As boys are so often cured by a truss when the hernia is of moderate size, I have little doubt that my operative cases remained cured, even though I have done the operation on large hernias only. One certainly was still cured after six and a half months.

Umbilical hernias in children are so uniformly curable by apparatus that operation must be seldom demanded. I would not hesitate, however, to operate shortly after birth if the protrusion was not easily retained by bandage or truss.

I have recently operated, to relieve pain, upon two cases of what seemed to be small, irreducible femoral hernias, to find a cystic tumor developed apparently in the sac of a cured hernia.

Woman, aged twenty-eight years. A pedunculated cyst had developed in the sac of an old femoral hernia. She had not worn a truss. The ring was closed by inflammatory adhesions so that it admitted only the end of a probe. Cyst and sac removed. Ring closed with silk sutures and reinforced by triangular piece of fascia from pectineus muscle. Before operation she had attacks of pain in tumor, requiring her to go to bed. Tenderness and pain on walking or sneezing existed when patient was admitted for treatment. Further history unknown.

Woman, aged nineteen years. Cyst had developed in the sac of an old hernia. Had never worn a truss. No omentum or bowel in tumor. Ring closed by neck of sac, which was adherent to itself. Edges of ring sutured with chromicised catgut. This case suffered pain before operation, and had several attacks of vomiting, with pain in the tumor during the five months of its existence. Examined six and a half weeks afterward. No return of tumor; no vomiting; pain gone, though she still has pain in other parts of body, such as abdomen and near breast of other side.

This condition is, I believe, not very rare; but I do not understand the cause of the pain, which in one case was certainly relieved by the operation. As it is stated that neither patient had worn a truss, the cause of obliteration of the neck of the sac is interesting. Spontaneous adhesion of the structures in the ring is, however, possible, for plastic exudate might readily be excited by a temporary strangulation followed by spontaneous reduction.

My previous conservatism has been further modified by the knowledge that a former patient with a small hernia, about four and a half inches above the navel, recently died of strangulation.. When she was under my care several years ago for colicky pain in the tumor I might have operated, but advised her to be satisfied with a truss. She was a woman of culture, and I thought it perfectly safe to trust her with a truss.

My present attitude on the question of operations for the radical cure of hernia may be formulated somewhat thus:

Inguinal and femoral hernias in children, if reducible, should be operated upon only when large or painful; if irreducible, they should always be subjected to operation unless there is some special contraindication.

Umbilical hernias in children seldom need operation.

Reducible inguinal and femoral hernias in adults should be operated upon if large or painful and when the patient's wilfulness, lack of intelligence, or poverty makes it probable that a well-fitting truss will not be properly worn.

Irreducible inguinal and femoral hernias in adults should always be treated by operation unless some special contraindication exists.

Umbilical hernias in adults, whether reducible or not, should usually be operated upon, and especially so in patients leading laborious lives and having voluminous abdomens difficult to fit with trusses.

Ventral hernias should usually be subjected to operation.

THE USE OF CHLORINE IN THE TREATMENT OF TYPHOID FEVER.[1]

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From the time of Hallé (1785) chlorine has been known as a disinfectant. Yet its use has been chiefly as an external application and for the destruction of infectious material unconnected with the human organism. It has been believed that because it is so extremely irritating to the respiratory mucous membrane it would be equally so to the alimentary—a belief not warranted by fact.

When it is administered *per os* it is, in part, changed into chlorides by combination with alkaline bases in the stomach or blood, and in this form is excreted by the kidneys. That it is not all so combined is proved by Edwards, who observed that in a fatal case of typhoid fever, in which the necropsy showed "enormous ulceration," these ulcers were dyed a greenish-brown color. If inhaled as chlorine and absorbed by the lungs, it permeates all organs and tissues, penetrating even to the brain. This was shown in the fatal case reported by Cameron, where the distinct odor of chlorine was perceived in the brain. Further evidence is to be found in the fact that when administered by the stomach, the nose being held, the odor of chlorine is noticed in the breath within a few minutes. Generally by twelve, almost invariably by twenty-four hours, the feces give a distinct odor of the gas. In Edwards's cases the feces were not offensive.

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[1] Read before the Medical Society of the State of New York, at Albany, February 5, 1895.

Locally, chlorine is irritating. If given internally in moderate doses, it quickens the respiration, increases the force and frequency of the pulse, and excites the functions of the organs of secretion, notably increasing the flow of saliva and of bile. Huseman reports that it increases the appetite and facilitates digestion—certainly there seems to be a greater power of assimilating food. Kletzinsky believes that it stimulates the liver and kidneys. Bouchard is of the opinion that internally it is an excellent antiseptic. The reason for this statement is not far to seek. Its great affinity for hydrogen, generally setting free oxygen, permits of the oxygenation of putrefactive material. Thus, it corrects the fetor of certain products of fevers and prevents resorption of infectious material. Through its stimulant effect upon the liver more bile—itself a disinfectant of no mean value—is poured out. Because of its action upon the kidneys the toxins already formed are more rapidly eliminated. Since putrefactive processes in the intestine are inhibited, the temperature gradually falls and the ulcerations heal; the dangers from these ulcerations, as perforation, hemorrhage, and secondary infection, are minimized. As factors of less importance are its stimulating effect upon the heart and the increased digestive power.

As observed facts in its use in the treatment of typhoid fever, we may cite the gradual and permanent fall of temperature to the normal; the shorter duration of the disease, with rapid and complete convalescence; the clean tongue and improved digestion; the increased strength; clearer intellect; and absence of nervous disturbances.

For the past ten years Yeo has used a preparation of chlorine made as follows: In a twelve-ounce bottle are placed thirty grains of powdered potassium chloride and sixty minims of strong hydrochloric acid. To this water is gradually added until the bottle is filled, the greenish-yellow vapor of chlorine becoming at once apparent and marked. Finally twenty-four to thirty-six grains of quinine are dissolved in the solution and a small quantity of syrup of orange-peel is added. Of this preparation one ounce is administered every two, three, or four hours. In this preparation the effect of the quinine, as well as that of the chlorine, is obtained. In my own cases I have found the aqua chlori of the *United States Pharmacopœia* efficient, but it must be freshly prepared. Chlorine-water should contain at least four-tenths of one per cent. of the gas, and, well diluted, can be administered in doses of from one to four fluidrachms every two, three, or four hours. As soon as the feces lose their offensive odor and the odor of chlorine is perceived in them, the dose-limit has been reached, and this amount continued will be sufficient.

It has been my practice to reserve chlorine for cases which have come under observation after ulceration has been established and systemic infection has become marked. In cases seen early, where the manifestations are presumably local, the insoluble intestinal antiseptics, as naphthalin, salol, bismuth salicylate, beta-naphthol bismuth, and tribromophenol bismuth, are indicated. In the cases cited chlorine was employed after other methods, as cold bathing, calomel, hydrochloric acid, had failed. For the report of these cases I would acknowledge my indebtedness to Dr. F. E. Russell, House-Physician of the Fourth Medical Division of Bellevue Hospital.

Case I.—F. A., aged twenty-two years; nativity, Norway; single; occupation, sailor; admitted November 23, 1894.

Family History. Father and mother living. One of six children, all living.

Previous History. Has had measles.

Present History. Patient began to complain on November 15th with diarrhœa and vomiting. Drank considerable water, and had considerable pain in abdomen. Head ached constantly. Patient stopped work as soon as he began to feel ill; diarrhœa and vomiting continued.

Physical Examination. Patient slightly anæmic. Fairly well nourished. Expression apathetic. Tongue moist, except down the middle; furred slightly; slightly coated white.

Lungs: On the right side behind, at the level of the angle of scapula, is an area about three inches in diameter where the breathing is bronchovesicular and the voice exaggerated. Percussion normal. Throughout both lungs, both before and behind, are a few subcrepitant râles.

Heart: Apex-beat is diffuse in the mammillary line in the fifth space. The first sound at the apex is feeble and slightly rough. Sounds at the base are normal.

Pulse: Pulse is rapid, very soft, compressible and regular.

Abdomen: Abdomen is not distended, but scattered over it and the lower part of the chest are many rose-spots, not elevated, which disappear on pressure.

Spleen: Spleen slightly enlarged, but cannot be palpated.

Liver: Liver apparently normal.

Further History. November 28th. On the 24th there were scattered over the chest, abdomen, and both axillary regions a large number of small rose-spots, not elevated, and disappearing on pressure. On the 26th most of these faded out, and to-day comparatively few remain.

The patient's mental condition since admission has been that of great apathy, and during the 24th and 25th there was stupor alternating at night with a muttering delirium. To-day and yesterday the patient can be roused, and will answer questions intelligently, but drops back to sleep, which, however, is restless, and the patient's expirations are groaning.

On the 24th the patient vomited, three times, small quantities of curdled milk. Stools have been from two to three each day, thin, fluid, and smaller than at first. To-day his spleen is so much enlarged that it can be palpated. His tongue is clean and moist. The patient's pulse during the last two days has improved both in strength and rate. His general condition is somewhat better than on admission. His baths lower the temperature 3.8° F. Patient has not struggled in the bath, and the last few he has been anxious to get.

From the last note up to the second day of December the patient's condition has improved steadily. The temperature is not so high nor the pulse so rapid as they have been before. Force of cardiac impulse is somewhat improved.

Beginning on December 2d for three days, the patient's general condition went back to where it had been originally. The temperature was higher, the pulse-rate rapid and more feeble; but on December 5th the general condition again improved, and since then the progress of the disease has been steadily better.

The bronchitis which was found on admission of the patient to the hospital was never very severe and cleared up entirely in two weeks.

On November 29th was first noticed upon his chest, thighs, and legs an eruption consisting for the most part of medium-sized papules, with a few vesicles and an occasional pustule. The skin between the pustules was white and clear. On December 1st the papules had mostly turned into pustules, a few of them being umbilicated. About December 3d, over the lower margin of the ribs and on the anterior surfaces of both tibiæ were several large furuncles. At present these still remain, but the pustules and papules have mostly disappeared. The patient's general condition is now very good. He sleeps well at night, is bright and rational in the daytime, and begins to complain of hunger.

December 14th. To-day the patient's order was changed to chlorine-water and whiskey. His temperature is not high (over 101°), but is constantly above normal. The stools are fluid and light yellow, but contain no undigested milk. The furuncles upon the body and legs have increased in number and size, and cause a great deal of discomfort to the patient. Upon the left scapula and both elbows are furuncles which are breaking down into open sores. The emaciation of the patient is extreme; the skin loose, wrinkled, scaly, and dry. The patient complains bitterly of hunger.

18*th.* There is a distinct odor of chlorine through the stools and breath. The temperature-range has been lower. The patient is brighter and looks better. The furuncles have taken on a healthier appearance and are granulating up. To-day, in addition to the chlorine and whiskey, the patient was given large doses of iron.

20*th.* For the last few days the patient's stools have been formed and much less frequent. They have the characteristic odor of chlorine. The furuncles look much better, and the patient begins to have some color in his cheeks.

27*th.* The general condition of the patient is much improved. He has a fairly good color, is gaining rapidly in strength and in flesh, and his appetite is much greater. He was allowed to sit up in bed.

January 5*th.* Since the last note the patient has been up and around the ward most of the time. He is still constipated, but the stools are normal. He has been getting a gradually increasing diet. Although he still runs a slight temperature, his condition is excellent, and all but two of the larger furuncles have healed up.

Summary of Treatment. From admission to December 10th he received baths, for several days as many as six in the twenty-four hours. In addition he received whiskey, calomel, hydrochloric acid, digitalis, and peptonized milk to December 13th. Although there was some improvement, the temperature never reached the normal, excepting on a few occasions after a bath, when it immediately rose again. After the administration of chlorine, the fall was gradual and permanent, reaching the normal in three days and remaining about this point until the last record, which was January 2d. Coincidently with the fall of temperature the furuncles improved in condition, the general symptoms became better, and convalescence became established.

Case II.—J. S., aged twenty-eight years; single; nativity, United States; occupation, horseshoer; admitted December 15, 1894.

Family History. Father and mother living. One of nine children; two died while very young. No tuberculosis in the family.

Previous History. Has had measles and pertussis.

Present History. Upon December 5th the patient began to vomit. This lasted about ten days; at the same time he was troubled with diarrhœa, a dull headache, pains in the back of neck, bones and muscles over the entire body; dry mouth and tongue, with flashes of cold and heat. The patient did not go to bed until December 15th, ten days later. Bowels are ordinarily regular. From December 1st to December 15th the patient has been on board a cattle-ship.

Physical Examination. Patient well nourished. Not anæmic. Tongue moist, thickly coated, yellowish-white.

Lungs: Show signs of mild general bronchitis.

Heart: First sound at the apex is very short; otherwise normal.

Abdomen: Not distended nor tender. There are a few, three or four, small rose spots on the abdomen, which disappear on pressure.

Spleen: Slightly enlarged; cannot be palpated.

Liver: Normal.

Urinary Analysis. December 17th. Color, amber; clear; reaction, alkaline; albumin about one-tenth per cent.; specific gravity, 1020.

Further History. December 16th. To-day can be seen over the entire abdomen, lower part of the chest, and to a slight extent upon the back, many rose-spots.

19*th.* A few spots still remain upon the abdomen. Spleen is the same size as on the 15th.

The tongue is clean, but dry, red, and glazed. Pulse is slow, of fair force, and dicrotic. Stools are three to five each day, small, thin, watery, yellow, and contain no masses. The patient's general condition is good.

28*th.* On the 20th of December all other medication and treatment was stopped, and the patient was put upon chlorine-water; from that time up to date the temperature-curve has gone steadily downward. To-day the patient shows that he has gained flesh and strength; he is brighter and feels better. The pulse has been less rapid and has lost its dicrotic character. The stools have diminished in number and are rarely diarrhœal; they smell strongly of chlorine. Yesterday and to-day the patient complained of severe colicky pains. The chlorine-water was omitted.

January 1*st.* The patient's temperature is now practically normal and he has no bad symptoms.

11*th.* The patient now sits up and walks a little; he is rapidly gaining in flesh and strength.

Summary of Treatment. Baths were administered from admission to December 20th without much effect either upon the disease or the patient's condition. He also received calomel and hydrochloric acid; the chlorine was first given on the 20th. The temperature first reached normal on the 25th and remained so until the date of the last record, January 8th, although the chlorine was stopped on December 25th. From the administration of the chlorine the patient's condition began to improve.

Case III.—W. S., aged thirty-eight years; married; nativity, United States; occupation, sailor; admitted June 24, 1894.

Family History. Negative.

Previous History. Up to the present time has never been sick. Says he is not a heavy drinker; is more of a periodical than a steady drinker.

Present History. Trouble began one week ago (June 17th). He had no chill, but felt all broken up, sore, and stiff. His diarrhœa began about June 20th; had two or three thin, yellowish movements in each twenty-four hours. Has not had any nose-bleed.

Physical Examination. Patient well nourished; somewhat anæmic; tongue moderately dry and coated white.

Lungs: In front percussion normal; high-pitched inspiration over both apices; otherwise normal. Behind normal, with the exception of a few subcrepitant râles over left base.

Heart: Normal in size and position; action regular; no murmurs.

Liver and Spleen: Apparently normal.

Brain and Nervous System. He had a marked tremor of hands and of tongue. During the daytime he was rational, but at night was delirious.

Further History. June 28th. On the abdomen and extending up onto the chest are many rose-spots, disappearing on pressure.

Urinary Analysis. June 30th. Color, amber; clear; reaction, acid; specific gravity, 1020; albumin present; few pus-cells.

July 1st. On the 29th of June the spots which had appeared the previous day had faded out and a new crop appeared. On the following day (the 30th) he had another crop. These spots have faded considerably, but can still be seen.

Last night the patient became delirious, and was given Magendie ♏v., hyoscyamine gr. $\frac{1}{100}$, hypodermically at 9 P.M.; during the remainder of the night was quiet, and to-day he has been perfectly rational. His general condition is very good. Yesterday noticed for the first time marked rigidity of right arm, accompanied by no pain nor tenderness.

9th. Since the last note the patient's temperature has run about the same. On July 2d began to give whiskey; has had no delirium since; pulse and general condition have remained very good.

11th. Yesterday and to-day the stools have been solid. Every morning the patient has had a chill, yesterday following a bath; but not this morning until eight hours after. Each chill has been followed by a fall of temperature.

In right lower chest behind there is an area about four inches in diameter where there is dulness on percussion, bronchial voice and breathing; crepitant and subcrepitant râles.

Urinary Analysis. Color, yellowish; turbid; reaction, acid; specific gravity, 1020; flocculent precipitate; pus-cells; granular cells.

13th. For the last two days the patient's general condition has been getting worse. Pulse has been much weaker; respirations shallower, and *subsultus tendinum* more marked. Yesterday afternoon the patient had a chill, followed by a rise of temperature from 100° to 106.8°; pulse became exceedingly weak; patient became very cyanotic and for several hours was in imminent danger of death. Last night the patient had a profuse cold perspiration, and the temperature has gradually fallen to 97.8° this morning. Pulse is better than last night and the condition otherwise is about the same. Patient has no cough nor expectoration.

23*d.* Since the last note the patient's general condition has been improving very slowly; the temperature has been gradually rising and has been running irregularly between 99.2° and 101.8°. *Subsultus tendinum* is scarcely noticeable, and the patient says he feels very well. Last night he had a slight chill, followed by no rise in temperature. The signs in the chest remain the same as in note of July 11th.

26*th.* On the afternoon of the 24th the patient had a chill, followed by a rise of temperature of about two degrees. A 9 o'clock he had another chill, followed by a rise in temperature of two degrees and by a cold perspiration, but apparently no depression. At 9.30 yesterday morning the patient had still another chill, followed by a rise of nearly five degrees, by an excessive amount of cold perspiration and a good deal of depression In the morning his temperature had fallen to 99.6° and he slept well during the night. The râles in the chest have disappeared and other signs remain the same.

30*th.* Since the last note the patient's general condition has been about the same as before the series of chills. The temperature has run between 98.4° and 101.2°, reaching the highest point last night. To-day there is a little more tremor noticeable in hands and face, and for the past three days the bronchial breathing has disappeared from the chest, but the bronchial voice and dulness still remain.

August 3d. On July 31st the patient was given an egg, and was propped up in bed for a short time. Yesterday his temperature went up to 102.4°, but his general condition remained the same as before.

7*th.* Since the last note the patient has been running a high temperature of an irregular type for which no reason can be discovered. His general condition seems to be no worse for it. Signs in the lungs have returned almost to normal, slight dulness and slight change in voice alone remaining. The spleen is apparently normal in size. The patient's only complaint is of pain in the bones, arms, and back; the arms are not so rigid as they have been, and movement is not so painful. For the past two days the tendency of the temperature has been slightly downward.

Urinary Analysis. August 8th. Color, yellow; turbid; reaction, acid; specific gravity, 1013; albumin negative; few pus-cells.

Summary of Treatment. This patient received baths from the fifth day after admission until July 12th. In addition there were exhibited various drugs, opium, strychnine, hydrochloric acid, salol, sodium bromide, hyoscyamine, and capsicum. The reinfections of July 12th, 24th, and August 11th were treated partly by baths, with stimulation by whiskey and strychnine, and by quinine, salol, and salophen, and later by creosote in small doses. The temperature remained irregular, however, until chlorine was administered on September 13th, when it became normal, and remained so until the termination of this record, on October 16th.

CASE IV.—D. J., aged thirty-two years; single; occupation, bartender. Admitted October 24, 1894.

Family History. Father died of pneumonia; mother of Bright's disease; one of eight children, five of whom are living; no history of tuberculosis in family.

Previous History. Remembers no previous history.

Present History. Patient was first taken ill three weeks ago, about the 2d of October; he worked for a week, and was then compelled to go home and to bed. The sickness began with a heavy, dull, constant pain over the upper part of the abdomen and lower chest; it pained him to take a long breath. He coughed a good deal, which produced slight nausea, but no vomiting. Has had some chills since the beginning of the attack; bowels have been constipated. He has been a moderate drinker for a number of years.

Physical Examination. Fairly well nourished; quite anæmic; expression apathetic; tongue moist, slightly coated white; mouth somewhat dry.

Lungs: Right side in front, normal; behind, percussion normal; breathing exaggerated and expiration prolonged and somewhat high-pitched; voice exaggerated; from spine of scapula downward to the base signs are normal.

Left side in front normal; in axillary space below fifth rib are a few crepitant râles and friction-sounds. Behind over upper lobe, breathing and voice are exaggerated; over lower lobe, breathing and voice are diminished. Percussion normal. There are a few crepitant râles and friction sounds over both bases. When the patient coughs subcrepitant râles and sonorous breathing can be heard.

Heart: Normal in size and position. Pulse soft, but of good force; not rapid.

Spleen: Slightly enlarged.

Liver: Apparently normal.

Further History: October 27th. Since admission the patient's temperature has been constantly high; pulse and respiration never very rapid. On the 26th his tongue became thickly coated, yellowish-white, but continued moist. On the same day first noticed that the patient was somewhat deaf. During the morning he had a slight nose-bleed, Since admission the patient has been constipated, and to-day, after an ounce of castor oil, he had four movements which were all thin, yellow, and watery, containing small masses of yellow feces.

30*th.* On the 28th the patient's tongue was coated with a thick layer of brownish-yellow material, while down the median line it was dry and furred. Rose-spots first appeared over the abdomen on the afternoon of the 27th. On the 29th several new ones were noticed. To-day the patient's tongue remains the same, and he complains of its dryness. His deafness has increased considerably. The abdomen is tympanitic and somewhat distended. The stools have increased in number and are of the same character. The patient is more hapatetic and sleeps most of the time. He has occasional twitching movements about the mouth and in the arms and legs. His cough, which at first was frequent and loose, with scanty expectoration, has largely disappeared. His general condition is not so good as on admission.

Urinary Analysis. October 26th. Color, amber; cloudy; heavy brown precipitate; reaction alkaline; a trace of albumin; triple phosphates and ample urates; specific gravity, 1022.

On the 31st of October the patient was given phenacetin and salol, after which his temperature-curve, although constant, was on a lower plane than before. On the night of November 1st he had two movements containing some fecal matter and a considerable quantity of dark clotted blood. On the second he had a hemorrhage from the bowels, about a pint of small dark clots. His temperature fell to 100.5° F. On the 3d he had two movements, which were fluid but dark and tarry, but contained no fresh blood. Since the 1st the patient's pulse has been softer and more rapid, and the heart-impulse is weaker; respiration has been most of the time about normal; when the patient is roused it increases in frequency. The patient is not so deaf as he has been, though he still hears imperfectly. He is drowsy no more, but is more apathetic. On the abdomen there are a few new spots, and the old ones have become papular. There is slight tympanites. In the lungs the signs of bronchitis have increased.

November 7th. Since the 3d the stools have been moderate in number, small, thin, and yellow, and show no evidence of blood. The patient's temperature has been slightly higher since the 3d, when the antipyretics were discontinued. On the 4th, for the first time, the tongue could be thoroughly cleansed; now it is not coated, but is red and glazed. The rest of his mouth is also very dry. Yesterday and to-day he has complained of pain over the right iliac region, extending up into the right chest. There are some tenderness on pressure and moderate distention. There are no new spots, but the old ones remain. The spleen is larger than when last noted. In the lungs there is an increase in the number of subcrepitant, mucous, and sonorous râles, but no signs of consolidation. The patient does not cough much and expectorates only a small amount of white mucus. The pulse is more rapid, quite soft, and compressible. He still has twitching movements of the muscles of the face, hands, and forearms, and occasional movements of the legs; at night he sleeps well and has no delirium. In the daytime he is very drowsy and more apathetic than he was. His general condition is not so good as at last note.

9th. On the 7th the patient had three fluid stools; the second contained a large number of small, dark-red clots. On the night of the 7th the patient was very weak, and although the temperature was high only at 9 o'clock, his heart-action continued rapid and weak and occasionally irregular during the whole of the night. He was restless and delirious most of the time, sleeping very little. His respiration was very irregular during part of the night, a few inspirations being strong and full, but most of them rapid, weak, and shallow. On the 8th the temperature was higher, 104.2° F., with a pulse of 140. He had seven stools, the third containing small, dark blood-clots and a considerable quantity of mucus. His general condition is very bad. He does not expectorate, and his respiration is rattling from the accumulation of mucus in his throat and bronchi. He sleeps little, complains of pain in the right side of the abdomen and chest, and of his difficulty in breathing. Early in the morning his temperature dropped to 100.4° F., and has remained down most of the time since. Heart-action has improved and respiration is not so rapid; the general condition has improved slightly during the last twenty-four hours.

Summary of Treatment. This patient received various remedies: hypophosphites, quinine, hydrochloric acid, whiskey, phenacetin, salol, opium, strychnine, and strophantus. Baths were commenced on October 30th and continued to November 8th. The temperature was very irregular, frequently going below, but never remaining at normal. Chlorine was administered on November 26th and continued until

December 15th. The usual results appeared as to the patient's temperature and general condition. On the 16th, after being out on a pass, the temperature rose temporarily. He was discharged cured on the 22d.

The cases above cited are average ones, and illustrate very well the effect of the administration of chlorine.

CONCLUSIONS. In the treatment of typhoid fever:

1. Chlorine can be safely administered until complete disinfection of the alimentary canal is obtained.

2. Under its use the tongue becomes cleaner, the appetite and digestion better, fever lower, and the stools devoid of odor.

3. The general strength, the intellectual processes, and nervous conditions improve.

4. The disease is shortened in duration, and usually proceeds to rapid and complete recovery.

749 MADISON AVENUE.

MODIFIED MILK AND STERILE MILK.

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I. MODIFIED MILK. THE CASEIN OF COW'S AND WOMAN'S MILK.

MANY years ago, after examining the numerous proposed substitutes for woman's milk, the author found as his final result that no other substance appeared to be equal in value, as a basis for the rational feeding of infants, to cow's milk. Furthermore, that he regarded the transformation of cow's milk by means of a suitable change in the percentage and properties of its constituents had been practically accomplished, so that in what he thought might be fairly entitled "humanized" milk we possessed a chemical and physiological equivalent of human milk.

The modification of the percentage-composition was regarded merely as half of the necessary change, the other and equally important part being the alteration in the character and deportment of the constituents themselves. Since that time there have been many additions to our knowledge of the true nature of these constituents, and these additions have tended to increase the relative importance of the latter half of the modifying process. More and more definitely has it been established that cow-casein and woman-casein differ not only in their chemical composition and formulæ, but also in the manner in which they are combined with the mineral substances existing in the two fluids. And not only so, but the differences in the manner in which they react with chemical reagents and their different behavior with solvents and digestive fluids, and, most important of all, the differences in the mode and degree of their assimilation in the various portions of the digestive tract have been pointed out and insisted upon.[1]

Some of these differences are encountered in a striking manner as soon as the attempt is made to determine the casein in woman's milk in the same way as has been found to be the most accurate for the determination of the casein of cow's milk. This is, to take 5 c.cm. of the milk, dilute to 50 c.cm. by the addition of cold water, and then add from 0.5 to 1 c.cm. of a 10 per cent. solution of acetic acid. Cow's milk forthwith curdles, and in less time usually than five minutes a dense precipitate of tough curds settles out completely. But the same method applied to woman's milk fails entirely. Only a small amount of a soft flocculent substance separates, the liquid remains white and turbid, and finally the filter is found to retain merely a thin coating, representing but a small fraction of the casein. And this quantitative method suggests the proper method of comparing the deportment of cow's and woman's milk on the addition of acid. The customary way is to take a small quantity of each milk in a test-tube, add a drop or so of acid, and then agitate the mixture. This method is too crude, since the character of the curd thus produced differs with the nature, strength, and amount of acid, and with the gentleness and rapidity of the agitation. So crude indeed is the method that it has led to the statement that the coarseness and solidity of the curd of cow's milk depend merely on the fact that this milk contains a larger percentage of casein. It has been stated that simply by dilution with water until the percentage of casein is the same, the appearance of the curd will also be the same in the two milks. The statement is incorrect, the soft cloudy turbidity in one case being readily differentiated from the coherent particles in the other.

The most satisfactory and convincing way of making the comparison is as follows: Take a number of watch-glasses of equal size and pour into each 5 c.cm. of a cold 1 per cent. solution of acetic acid. Then let the various dilutions of cow's milk and woman's milk fall drop by drop from as many separate burettes or dropping-tubes, through a height of three inches, into the middle of the acid below.

It has also been stated that when the casein of cow's milk is thrown down by dilute acid it carries with it 1.16 parts by weight of fat to each part by weight of casein, whilst that precipitated from woman's milk carries down three parts of fat. I have been unable to repeat this experiment with woman's milk, because, as stated above, I have been unable to precipitate its casein with dilute acid. But with regard to that part of the statement which refers to cow's milk the question naturally arises: If it be true, then in the analysis of milk it is entirely unnecessary to make separate determinations of the casein and the fat. For, if the fat be known, then by dividing its percentage by 1.16 we should have at once the percentage of casein; or if the percentage of casein be already determined, by multiplying by 1.16 we should obtain the fat. As a matter of fact, the fat and casein do not stand in this or any other fixed ratio in milk, and as a consequence they are always separately and independently determined in every complete analysis.

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[1] "The Chemistry and Clinical Value of Sterilized Milk." Leeds and Davis: Amer. Journ. Med. Sci., 1891. "Proteids of Milk." Haliburton: Journal of Physiology, xi. p. 449. "Die Milch-untersuchungen." Lehman: Pfluger's Archiv, 56, p. 558. "Beitrage zur Kenntniss des Frauencaseins." Wroblewski, 1894. "Die chemischen Unterschiede zwischen Frauenmilch, etc. Soxhlet: Munch. med. Woch., 1893.

In order to ascertain how widely the ratio may vary, I precipitated the casein and fat in a certain sample of whole milk (A); in cream (B); in a mixture of 75 c.cm. of A and 25 c.cm. of B (C); and in a mixture of 50 c.cm. of A and 50 c.cm. of B (D). The precipitation was made with dilute acetic acid. The casein was determined by finding its nitrogen and multiplying by the factor 6.25. By subtracting the casein from the total weight of the precipitate, the fat dragged down by the casein was ascertained. This figure for fat was compared with the total fat as found in a separate portion, and in every case was a little less; in other words, nearly all, but not quite all, the fat went down with the casein. For example, the total fat in the whole milk (A) was 3.4 per cent., while that part of this total fat which was carried down by the casein, when this was precipitated in sample A, was 3.27 per cent. The results were:

	Casein.	Fat.
A. Milk	2.38 per cent.	3.27 per cent.
B. Cream	2.04 "	19.93 "
C. ¾ A and ¼ B	2.38 "	7.33 "
D. ½ A and ½ B	2.25 "	11.73 "

The ratio of casein to fat in these four mixtures was:

	Casein.		Fat.	
A.	1 part	to	1.38	parts.
B.	1 "	"	9.8	"
C.	1 "	"	3	"
D.	1 "	"	5.2	"

instead of the assumed ratio of 1 to 1.16.

The average casein in cow's milk is 3 per cent.; the fat is 3.75 per cent. The average casein in woman's milk is 1.35 per cent.; the fat is 4.13 per cent. This makes the ratio for the former 1 to 1.22, and for the latter 1 to 3. So if it were true, which it is not, that dilute acid precipitated the casein and fat in woman's milk just as perfectly as it does in cow's milk, then the coagulum in the former would contain nearly three times more fat. Granting, however, that the coagulation of both milks takes place in the same manner in the stomach, the effect of the larger amount of fat would be to distend proportionately the coagulum of the woman's milk and keep the particles asunder. Therefore, it has been argued, fat should be added to cow's milk in such quantity that the milk, when modified for infant nutrition, should contain the casein and fat in the ratio of 1.22 to 3. The addition of the fat to make the above ratio is justified by adequate chemical, physiological, and clinical data, and such is now the general practice. At the same time, I have seen no evidence from actual experiment in the laboratory that the presence of this excess of fat, or even of a much larger excess, made any change in the inherent nature of the particles composing the clots themselves. On allowing mixtures C, D, and B to fall drop by drop into dilute acid, as above described, the phenomena are often very striking. A film of fat shoots over the surface and arranges itself in a network of diverging lines; but the great mass of the drop plunges directly to the bottom, and then rolling outwardly in coherent clots keeps sharply separate from the acid liquid. Of course, a curd containing three or five or ten times more fat than casein, like that from the above mixtures, is more rounded and less dense than the curd from whole milk containing only 1.38 times more fat; but it always is coherent and curd-like, and, unlike that from woman's milk, it does not diffuse off into the surrounding liquid in intangible cloud-like turbidity. And while the myriads of microscopic globules of which butter-fat is composed are more perfectly entangled by the casein and serve better to keep apart the particles of the clot than any other substance with which I am acquainted, yet so far as this action of distention is concerned it is a mechanical one. It is that of an attenuant, causing the particles of casein to present a greater surface to the solvent action of the digestive fluids. It does not differ, so far as its effect in distending and subdividing the clot is concerned, from gum, sugar, dextrin, starch-water, gelatine, extract of barley, extract of oatmeal, etc. These are substances which are not themselves precipitable by acid, but when they are added to milk they are mechanically carried down in the clot of casein. In a former article (*Trans. Coll. Phys.*, Philadelphia, vol. vi.) I have given the results obtained with solutions of these bodies when added to milk, and have shown that they are with difficulty removed from the clot even by long-continued washing. But while their action in attenuating the clot is beneficial, it must not be forgotten that all these bodies are foreign and abnormal to natural infant-food. Nature herself presents three attenuants of the clot: the globules of butter-fat, which are by far the most important, lactalbumin, and lactose. Admitting the importance of the first in the making up of modified milk to be conceded, what should be done in reference to the lactalbumin. This can be best decided by comparison of the percentage-composition of human milk, cow's milk, and cow's milk diluted until it approaches to percentage-equality with human milk. Omitting the lactose and mineral constituents as not being involved in the present inquiry, the percentages are:

	Fat.	Total albuminoids.	Casein.	Albumin.
Human	4.13	2.00	1.35	0.55
Cow's	3.75	3.76	3.00	0.76
Cow's, ½ dilute	1.87	1.88	1.50	0.38

To make up the deficiency in lactalbumin it has been suggested by several writers, among others by Prof. Lehman, to add egg-albumin. In practice, however, the results are very disappointing. The white of egg must be freshly prepared and its membranes must be strained off, or otherwise they will be mechanically carried down in the clot. Simple as the proposition appears, it is a troublesome and messy operation to prepare egg-albumin and add it to diluted milk in the approximate proportion of 0.4 to 0.5 per cent. But this objection is less serious than that of its inability to act as efficaciously as butter-fat in attenuating the clot. To study what actually occurred, I exaggerated the amount of egg-albumin in three experiments with as many separate samples of milk. Each sample was diluted with an equal volume of water, one-half of each sample was mixed with 20 per cent. of egg-albumin, and dilute acid added to the six. Albumins A and B were thoroughly strained, C was not. The results were:

	Casein.	Casein and albumin.
Milk	1.15 per cent.	1.00 per cent.
Milk and albumin (A)	....	1.06 "
Milk	1.6 per cent.	
Milk and albumin (B)	....	1.3 "
Milk	1.6 per cent.	
Milk and albumin (C)	....	1.8 "

Egg-albumin, like lactalbumin, is not precipitable by dilute acid. There was no difference perceptible to the eye between the clots in the milks alone and in the milks to which the white of egg had been added, except in the case of C. Though it was mechanically carried down in the casein, it was mostly removed from the clots in the process of washing, as the lower figures with A and B show. Of course, in the process of digestion the clot is not subjected to such a washing and the albumin exerts a beneficial action in distending and attenuating the clot. Vastly less so, however, than the globules of butter-fat, which are not only almost perfectly co-precipitated, but cannot be removed from the casein by the most exhaustive washing.

In attenuating the clot, instead of using any foreign substance, it would be most natural to use such substances as are already represented in woman's milk. These substances are lactose, globules of butter-fat, and soluble proteids, non-coagulable by acid. In addition to their mechanical action as attenuants, they have the more important function of acting as the elements of nutrition essential to be added to the diluted and modified cow's milk. The lactose obtained from cow's milk by processes of crystallization and refining is of great purity and is identical in its properties with the lactose of woman's milk. The butter-fats of cow's milk, cream, and woman's milk are so nearly the same in average composition that their differences are not practically appreciable. They differ from one another far less than they do from the animal and vegetable fats which most nearly resemble them. When cow's milk of average composition is diluted with half its volume of water, and one-eighth of this new volume is added of cream of average composition, the ratios are as follows:

	Fat.	Casein.	Albumin.
Cow's milk	3.75	3 00	0.75
Cream	18.80	2.00	0 50
Modified milk	4.13	1.74	0.44
Human milk	4 12	1.35	0.65

These figures for cow's milk are in accordance with my own analyses of a large number of samples of whole dairy milk supplied to New York City. If instead of them we take for the average the figures compiled by the Vermont Agricultural Station for all parts of the United States, and published in their report for the year 1891, we have for milk: Fat, 4.00; casein, 2.60; albumin, 0.70; and for modified milk: fat, 4.26; casein, 1.54; and albumin, 0.43. But in both cases the insoluble proteid is about as much too high in amount as the soluble proteid is too low. The addition of albumin alone does not take away the excess of casein, and as yet I have not encountered any practicable way of overcoming this inherent difficulty except by properly diminishing the insoluble proteid, nor any process so well adapted for so doing as that of an incipient and very partial peptonization of the casein. And inasmuch as breast-milk is sterile, while the freshest dairy milk is not, and the process of partial peptonization also renders the latter practically sterile, the main difficulty in the easy preparation of a modified cow's milk which shall be a chemical and physiological equivalent of woman's milk—*i. e.*, a "humanized milk"—is capable of being overcome, and the rest of the problem is a matter of nice adjustment and the incorporation of the remaining constituents.

II. STERILE MILK.

Much confusion has arisen in reference to this subject on account of the different meanings in which the terms "sterile" and "sterilized" milk are used. The confusion has partly grown out of the history of the subject and partly out of the difference of the processes to which milk is subjected in order to render it sterile. Prior to the classic researches of Hueppe (1859), Pasteur (1860), and Lister (1873), the true causes of the souring, fermentation, and putrefaction of milk were unknown. They established the fact that these changes would not take place in case the milk was kept for some time above the temperature of boiling water. When milk was to be sterilized for use in a bacteriological laboratory it was prepared in this manner, and when it was first introduced into general use on a commercial scale the same process was followed. One of the most perfect machines for so doing is that of Neuhaus, Grönwald, and Œhlman. The author studied this machine as used for supplying sterilized milk in Mayence, Germany, in the summer of 1891, and incorporated his report in the Report of the New Jersey State Dairy Commissioner for that year. The milk was subjected to two preliminary sterilizations at 80° to 90°, with a period of cooling between them. These heatings were about one-half hour long. Finally the temperature was raised during half an hour to 102°. I brought some of this milk to this country, and, although the cream and casein separated from the serum and the contents of the bottle were of a brownish color, they kept for many months, and on opening were found to be sterile. The whole object of the complicated mechanical appliances in this and similar apparatus is to heat the milk for an interval to 102°, in order to make sure of destroying, not only the bacteria, but also all spores which might possibly be present. If the term sterilized milk is used in its original and rigid signification, it should be restricted to that which has been heated above 102°. But the term is not now so restricted. Milk which has been submitted twice to a heat of 100° during two intervals, with a period of cooling between them, is ordinarily used in the laboratory for all purposes for which sterile milk is required, since the spores that need a higher temperature than 100° to kill them are seldom present. Moreover, milk which has been Pasteurized—*i. e.*, heated for an interval to temperatures considerably below the boiling-point—is sterilized in regard to the pathogenic bacteria that are liable to occur in milk, and frequently in regard to all bacteria. This is so well recognized that the apparatus sold for the household sterilization of milk maintains the milk in an atmosphere of free steam at a temperature a little below 100°. And starting with the preconceived notion that the heat must be raised to 100°, the author in his own experiments, amply confirmed by those of many other observers, found to his great surprise that a temperature of 70° continued for half an hour usually destroyed all the bacteria, and in many experiments he obtained the same result in a still briefer interval. In fact, the whole tendency of the labors of those who are engaged in improving the quality of the milk supplied by dairies for the feeding of infants, is against resorting to the sterilization at 100° as a safeguard which should be needed by any milk suitable for this purpose. The best dairy-milk at present obtainable in New York, and on which every precaution has been expended, contains by the time it is delivered from 3000 to 15,000 bacteria per cubic centimetre. At the dairy I found that this milk while in the can used for the milking contained in one trial 260 bacteria per cubic centimetre. The same milk passed over an aërator, by which its temperature was reduced to 50° F., but by which it was exposed to air over an extended surface, had the number of bacteria raised to 380. By heating another portion taken directly from the milk-pail to 70° C., and keeping it at this temperature for ten minutes, it was rendered sterile. The great economy involved in heating the perfectly fresh milk from the temperature of blood-heat to 70°, or through only 32°, is of the highest practical importance, and I am at present engaged upon apparatus intended to effect this result in the dairy. Certainly fresh milk obtained from a dairy and from cattle, both under proper hygienic conditions, and then brought to a practically sterile condition, is vastly to be preferred to milk as ordinarily sterilized. The latter is market-milk in which frequently many tens of thousands of bacteria per cubic centimetre have already developed, along with the products of decomposition under their action, before being cooked for a considerable time at or near 100°.

In this connection my attention has been drawn to an article upon "The Nutrition of Infants Fed upon Raw, Boiled, Pasteurized, and Sterilized Milk," by Dr. Henry Koplik (*New York Medical Journal*, 1895, p. 455). It is a plea in favor of using milk only after it has been sterilized by prolonged heating at 100°. The experimental evidence brought forward in its favor is that afforded by the determination of the relative percentages of nitrogen contained in the feces of infants fed upon the different kinds of milk. This again is founded upon the thesis, which the writer first endeavors to establish, "that in the nitrogen taken up by the system we have a clear and definite index as to the assimilation of albuminoids ingested into the economy."

But the figures obtained show the least loss of nitrogen in the feces of an infant fed upon raw milk, and the greatest loss when the milk was sterilized. In fact, the writer rejects his own experimental evidence as not tending to support the thesis put forth, and concludes that: "Given a cow's milk to start with, the nitrogen excreted seems to be much the same, whether we Pasteurize, boil, or sterilize the milk." The unfavorable results which Davis and many other careful observers have noted in the clinical history of infants fed on sterilized milk, he regards as more fairly attributable to the fact that cow's milk contains casein which differs widely from the casein of breast milk. With the latter part of the statement I am in entire accord, believing that the most important forward step in the nutrition of infants has been that of modifying the inherent nature and the state of combination of the cow casein.

REVIEWS.

TWENTIETH CENTURY PRACTICE. AN INTERNATIONAL ENCYCLOPEDIA OF MODERN MEDICAL SCIENCE. BY LEADING AUTHORITIES OF EUROPE AND AMERICA. Edited by THOMAS L. STEDMAN, M.D., New York City. In twenty volumes. Vols. I. and II. New York: Wm. Wood & Co., 1895.

THE first two volumes of this work, the most extensive in size of any hitherto originating in this country, are now before us. Volume I. is devoted to "Diseases of the Uropoietic System." Volume II. has the subtitle "Nutritive Disorders." The editor explains in a preface that the subject of infectious diseases is reserved "for the later volumes, in the hope that by the time they are published a solution of some of the problems in the pathogenesis and therapy of these affections will have been reached." The inference might be drawn that in the pathology and therapy of other diseases, especially those of the kidney, Addison's disease, rheumatism, and diabetes mellitus, finality has been reached. We know no imperative reason for considering infectious diseases before those of organs or of metabolism, and the reason given in this case for doing otherwise is both needless and absurd. As in all similar works, the articles in these volumes vary widely in quality. Some of them are valuable additions to our literature, while of others nothing good can be said. In the very beginning we are struck by peculiarities of classification and assignment of topics and space, and these have results so serious that they must prevent the work, if present in future volumes, from taking the high position its size would seem to promise. Other peculiarities are foreshadowed in the affectation of the title and the inaccurate titles of the separate volumes.

We are willing to let the *Twentieth Century* pass its own opinion on the former, but it is a matter of some interest to notice in these volumes many of the symptoms of the "end-of-the-century-disease" as described by Nordau, such as vagueness and repetition. As regards the division of space, what can we think of giving one hundred and forty pages to rheumatism, or one hundred and eighty to gout, and but one hundred and ten to diseases of the kidneys, or, including surgical diseases and many symptoms of diseases of the urinary organs, two hundred and thirty pages? Even when the same disease is treated by two writers the subject is by no means always exhausted, though repetition is common. Some of the articles have more the style of an occasional article than an encyclopædic work. In the latter, personal experience and individual views are certainly in place, but one expects also at least an outline of current knowledge and of prevailing views on important questions. A work of this size is, or should be, consulted not only by those looking for prescriptions for actual patients or their symptoms, but also by those unable to refer to the recent literature of a subject, yet desirous of in-forming themselves on it as easily and as accurately as possible. It is, or should be, also, a source to which later writers may be able to turn to find out quickly what was thought or done about various diseases in times past. Thus, Virchow's *Handbuch* gives us an index of the theory and practice of forty years ago, as Ziemssen's that of twenty years ago. We doubt if these volumes can be used in the same way. If it be said, in extenuation, that the present work includes more topics than either of those mentioned, we have only to point to the magnificent encyclopædia of Eulenburg.

A work on medicine in twenty volumes should not fear comparison with others of similar size. A thing which seriously lessens the value of the present work now, and which will affect it later, is the lack of references. Some of the articles, even some of the longer ones, have no references, except perhaps to the sources of cases cited. Some others have a few, but not always the most important ones. In some articles it seems fair to find a relation between vagueness of exposition and lack of reference. The article of Von Noorden, however, in Volume II. is a brilliant exception to this criticism, and should serve as a model for others. The indexes are very unsatisfactory. There is a matter we cannot resist bringing up at this time, namely, the manner in which books of this kind are sold in this country. The putting forth, year after year, of the same edition of a large work is a wrong no less to the authors than to the readers of the volumes. The plan followed in Germany and France, of selling single volumes, and of revising those most called for or most subject to change, is so much better in every way that it is strange the other plan is still followed by us.

The time estimated for the completion of the work is unduly long, notwithstanding the numerous mechanical difficulties in the way. The faults indicated, however, do not prevent the present volumes from being of great value, so great that no physician should fail to read them, and, if possible, possess them. There are single articles in each one of value far beyond the price of the volume. The mere mechanical part of the work has been well done; the proof-reading is good as regards typography, not so good as to grammar and syntax. Other errors which careful editing would have corrected are not infrequent, such as the statement in regard to the measurements of the daily amount of urine according to different systems, on page 20, Vol. I. The translations of French and German articles are fairly good. The translator's note on page 647, Vol. II., is inane. It is impossible to review all the articles in these volumes in full, and we shall confine ourselves to giving an outline of the contents, with comments on some of the more striking features.

Volume I. begins with a chapter on Medical Diseases of the Kidneys, by Francis Delafield. In it the author has elaborated his classification of renal diseases more thoroughly and more successfully than in previous articles. This classification has many advantages, but its real value can only be tested by clinical experience. The matter of treatment receives more space than in the author's former articles. The main fault with the chapter is, as we have already said, that it is too short, and the sketchy way in which albuminuria, dropsy, and uræmia are described is a serious defect in an article admirable in many ways. Surgical Diseases of the Kidneys, Diseases of the Ureters, and Diseases of the Bladder are considered in two able chapters by Reginald Harrison. Following this is an excellent chapter on Diseases of the Prostate, by G. Frank Lydston. The author has the courage to record his want of experience with castration for enlarged prostate, yet the objections he urges do not touch the most important points involved. No matter how this question is finally settled, a discussion of the experimental and clinical evidence already available might have been expected in this work. Dr. Lydston also writes on Diseases of the Male Urethra. He holds gonorrhœa to be a "filth disease," which may arise *de novo* in the female. He "unhesitatingly affirms that, other things being equal gonorrhœa is more likely to be contracted innocently than syphilis." Here, as also in connection with other matters relating to the gonococcus, (spoken of as a bacillus!) and gonococcal infection, a discussion of observed facts would have been welcome. As regards gonorrhœal rheumatism, the author "inclines to the belief that the joint-disease is due to toxins elaborated in the urethral infection, absorbed into the circulation, and conveyed to the joint-surfaces." Not a word about actual observations! Notwithstanding faults of this kind, the article contains much of value, and will repay careful perusal. The remarks on treatment can be read with advantage by young physicians who have been properly taught the known facts about the pathology of the disease, but are unfamiliar with its therapeutic requirements. The next chapter, by E. Hurry Fenwick, has the curious title Diseases of the Urine. In this certain conditions are considered from the standpoint of symptoms—*e. g.*, hæmaturia, described largely from the author's own surgical experience; pyuria, accidental albuminuria, cystinuria, phosphaturia, oxaluria, polyuria, and chyluria. Although this chapter contains much of value and interest, it is disappointing on account of its mode of presentation. Nowhere in the book can we find any reference to albumose, peptonuria, or nucleo-albumin, and yet these are surely proper subjects for such a work. Volume I. ends with a chapter by Howard A. Kelly, on Diseases of the Female Bladder and Urethra, a subject which Dr. Kelly has done so much to advance, and presented in his clear and forcible manner. This chapter should have been longer.

Volume II. begins with Addison's Disease and other Diseases of the Suprarenal Bodies, by Sir Dyce Duckworth. The author does not make clear that Addison's disease is a disorder of nutrition, and, what is more important, he has not availed himself of the large amount of clinical, anatomical, and experimental work bearing on the subject which has been put forth in the last fifteen or twenty years. The statement (p. 16), "an excess of indican (urohæmatoporphyrin) has been rather frequently noted, etc.," gives an idea of the author's point of view. In marked contrast with this is the excellent article by Carl von Noorden on Diabetes Mellitus, in which all the aspects of this disease are admirably discussed and its treatment described in unusual detail. The next article, on Rheumatism, by Thomas J. Maclagan, is interesting on account of the large amount of speculation and small amount of observation it contains. Thus, after nearly thirty pages about theories of rheumatism, the conclusion is reached that the "rheumatic poison is malarial." Descriptions of Laveran's organism are dragged in by the heels in order to demonstrate the author's want of personal knowledge on the subject. As an example of Dr. Maclagan's mental processes, and of the chance way remedies of value may be discovered, the following is worth quoting (p. 246): "A striking fact in the natural history of the malarial fevers is that the trees which provide their cure grow best in countries and localities in which these fevers most prevail, nature seeming to produce the remedy under climatic conditions similar to those which produce the disease. In rheumatism a low-lying, damp locality and temperate climate present the conditions most favorable to its occurrence. Looking about for a plant or tree which flourishes under such conditions, that which most naturally presented itself was the willow—the various species of salix. Among the salicaceæ, therefore, a remedy for rheumatism was sought. The results exceeded all expectations." Certainly nothing could be simpler than this. We need no longer try to get new remedies out of coal-tar, nor to elaborate antitoxins. The author seems to intimate that salicin was recommended for rheumatism earlier than salicylic acid. He says, "Early in 1876 the results were given to the profession." Later: "Early in 1876 Stricker and Riess published a most favorable account of their experience (with salicylic acid). Their results were quite in accordance with those got from salicin." As a matter of fact, Stricker's article appeared in the first number of the *Berliner klinische Wochenschrift* for 1876. Henry M. Lyman contributes the next chapter, a long and interesting one, on Gout, and A. E. Garrod the next one, on Arthritis Deformans. Following this is a chapter on Diseases of the Muscles, by the late Dujardin-Beaumetz. How that well-known writer of therapeutic *causerie* got "*dans cette galère*" is difficult to understand. The chapter is altogether unsatisfactory. The volume closes with a chapter on Obesity, by Oertel, in which the methods of treatment devised by him are fully described.

It must not be supposed from the examples cited that we find nothing good in these volumes. On the contrary, they contain much of value, which we do not doubt will be appreciated by the profession. G. D.

CHIRURGIE DE L'URETHRE, DE LA VESSIE DE LA PROSTATE. INDICATIONS MANUEL OPERATOIRE. By V. ROCHET, Professeur Agregé à la Faculté de Lyon. Paris: G. Steinheil, 1895.

OPERATIVE SURGERY OF THE URETHRA, BLADDER, AND PROSTATE. By V. ROCHET.

THIS work is much like the last book of Hurry Fenwick's in that it purports to represent the latest advances in the surgery of the urethra, bladder, and prostate, with particular reference to operative technique and detailed descriptions of mechanical treatment when this is required. Rochet states with the characteristic theoretical modesty of his nation that his work is not intended for expert surgeons, since the latter will find nothing in its pages with which they are not already familiar, but is rather designed to help students and general practitioners. The author has very wisely refrained from quoting largely, but has endeavored to use his right of selection and has given as briefly and clearly as possible a description of methods of choice. The book is so illustrated that it is easy to understand operations the description of which might otherwise be misleading. A few pages are devoted to what are called Anatomical and Physiological Considerations. These, though excellent, might have been omitted. There follows a section upon vices of conformation. This is simply an epitome of what is to be found in every well-known text-book. The same may be said of Section II. upon traumatic inflammatory lesions. In the latter section there are one or two excellent illustrations and descriptions of the method of closing urethral fistulæ, and it is worthy of note that Zienbekis's method of radical cure in urethro-rectal fistulæ is clearly presented.

The treatment of strictures—*i. e.*, internal and external urethrotomy and urethrectomy—receive due consideration. Urethrostomy is also described with its proper indications; *i. e.*, certain traumatic and inflammatory strictures amenable to no other form of treatment and strictures complicated by well-marked lesions of the upper urinary tract and systemic involvement. Urethral and periurethral suture are carefully described.

The second portion of the book is devoted to the bladder, considerable space being devoted to the treatment of exstrophy. In this relation the author describes at length the implantation of the ureter in the colon. This is unfortunate, since it naturally prejudices one against his wisdom in choosing operations, the colon-implantation having been conclusively proved to be most disastrous in its result. Wounds, inflammations, fistulæ, and the operative treatment of tumors of the bladder are duly taken up. In the treatment of tumors no mention is made of Fenwick's admirable caisson. In considering partial and total resection of the bladder, the most recent literature does not receive due attention. Lithotrity is evidently not in favor with the author; indeed, from the standpoint of the logician, he completely proves his case against it in this manner: "Even those who are most in favor of lithotrity," he says, "acknowledge that it has contraindictions. Lithotomy has no contraindications, hence lithotomy is to be preferred." Thus with a touch of French wit does he add sprightliness to his writing, though somewhat at the expense of its authority. To add to his statement that lithotomy is the method of choice is in these days bad enough, but to state that suprapubic lithotomy should be preferred as a general rule is absolutely unbearable. The various methods of suprapubic cystotomy, including those of Trendelenburg—*i. e.*, transverse incision of Helferich, in which there is a preliminary resection of the pubis, and Tuffier (sympyhsiotomy)—are described at length, as are the various low operations. Some illustrations of suture of the bladder are given. In treating disease of the prostate, and particularly in the chapter upon hypertrophy, the operative treatment receives but scant notice. Total castration is mentioned as a means of curing prostatic enlargement, but no mention is made of White, to whom is due the credit for the introduction of this treatment. Indeed, it is clear that Rochet reads no American journals and very few in the English language.

As a whole, his work is disappointing; he has the knack of happy description, but not one of fortunate selection. He, no doubt, represents very well the practices and the knowledge of himself and his colleagues at Lyons. As representing the most recent advances and the best operative technique as portrayed, his book is in some respects a failure. It does not compare, for instance, in excellence with Fenwick's work. It is of little use to students and general practitioners. To the specialist it is most serviceable, since it gives him the technique of a number of operations which, without this work, he could only find with much difficulty, and often obscured rather than elucidated by the cumbersome phraseology of the original portrait. E. M.

RELATIONS OF DISEASES OF THE EYE TO GENERAL DISEASES. By MAX KNIES, M.D. Forming a Supplementary Volume to Every Manual and Text-book of Practical Medicine and Ophthalmology. Edited by HENRY D. NOYES, A.M., M.D. New York: William Wood & Co., 1895.

DR. NOYES, to quote his own words, "in presenting this treatise of Professor Knies in an English dress, has given a book whose quality is to a great degree unique, a larger field of usefulness." There is no doubt that English-speaking ophthalmologists will appreciate his unselfish task, because, although Dr. Noyes has not himself performed the labor of translation, he has carefully compared the pages with the original, and while he has not added many personal observations, those which are included distinctly increase the value of the work.

The book comprises nine chapters, opening with one on diseases of the nervous system, which includes the anatomical course of the nerves of the eye, the disorders in the domain of the ocular nerves and their central origin, the relation between the bloodvessels and the eye, the relation between the eye and the lymphatics, and, finally, the individual diseases of the brain, spinal cord, and nerves. These subheadings give some idea of the scope of this chapter, which is *facile princeps* of the entire work. Indeed, in order to approach this book in a proper spirit one must, like the author, have made it a favorite study to trace the relationship between the disease of the eye and the disease of the rest of the body, particularly the relationship which exists between ophthalmology and neurology.

A notable feature in the opening chapter is the care with which the researches, often contradictory, pertaining to the anatomical course of the nerves of the eyes, the nerve nuclei of the motor and sensory cerebral nerves, and the regions of cortical visual impressions have been studied and analyzed.

The arrangement of the system of fibres in the chiasm which is given corresponds in the main with the investigations of Gudden, and although Michel's theory of total decussation is mentioned it is not commended. Knies follows Perlia's description of the nucleus of the oculomotor. In the section devoted to the cortical disorders of vision Henschen's recent monograph could not be utilized, but Dr. Noyes has supplied this deficiency in several brief notes. There is an excellent exposition of hemianopsia and the lesions which cause this defect of vision, full consideration being given to the rarer types of half-vision as well as half-color-vision—hemiachromatopsia—and of homonymous hemiopic hallucinations, and to the relation of these phenomena to the localization of intracranial disease.

Touching the question of nomenclature, the following paragraph is interesting:

> "It would be advisable to employ special technical expressions for the different kinds of central and peripheral visual disorders. I would recommend that amblyopia and amaurosis be used solely for peripheral (and the rare intermediate) disorders, and the words terminating in "opsia" for central disorders of vision. In the former the light-reflexes of the pupil are also disturbed, and atrophic changes in the nerve, which are visible with the ophthalmoscope, usually occur sooner or later; in the other forms this is not true. The visual disorders of the tractus and those which are located in the

chiasm would then be called hemiamaurosis and hemiamblyopia (homonymous, binasal, bitemporal, incomplete, symmetrical). Hemianopsia would be reserved for central half-blindness and would always be homonymous. Anopsia would mean central blindness (cortical blindness), and the term miopsia (= seeing less) could be introduced for central diminution of vision. Hemimiopsia would then mean those cortical homonymous disorders of vision which do not amount to complete hemianopsia."

Disorders of the voluntary ocular muscles, the transcortical disorders of vision, and word-blindness, alexia, dyslexia, paralexia, agraphia; in fact, all the important clinical forms of what Knies calls the optical disorders of speech are amply considered.

There is a good description of the anomalies of the iris-movements, and the abnormalities in the size of the pupil of central character are considered in four divisions, namely, paralytic cerebral mydriasis (paralysis of the sphincter); spastic cerebral myosis (spasm of the sphincter); paralytic spinal myosis (paralysis of the dilator); and spastic spinal mydriasis (spasm of the dilator). The latter form is made to include dilatation of the pupil after cutaneous irritation.

Succeeding the pure anatomical and physiological considerations of the first chapter, which comprise more than one hundred pages, are the paragraphs devoted to the consideration of the individual diseases of the brain, cord, and nerves.

The remainder of the book is taken up with diseases of the skin, and of the digestive, respiratory, circulatory, urinary, and sexual organs. Then follows an excellent chapter on poisons and infectious diseases, and the book closes with a consideration of the constitutional diseases and their relation to the eye.

Everywhere one is struck with the enormous amount of literature that has been reviewed in the preparation of this treatise, but is impressed somewhat unfavorably with the numerous second-hand references, the constant appearance of "Jahr. f. Aug.," indicating that the author has not always gone to the fountain-head for his information. In not a few instances this neglect has led him into error. American literature has been utilized to some extent, but not by any means as much as it deserves, and almost always through the medium of German abstracts. To a certain extent the same criticism applies to the English ophthalmic literature.

A very interesting chapter, before referred to, is the one devoted to poisons. It contains in many respects the best account extant of the toxic amblyopias, in the widest acceptation of this term. To be sure, the account is brief, but the salient points of this important topic have been included.

Knies commits the great sin of failing to attribute epilepsy, Sydenham's chorea, and gastric disturbances to the influence of eye-strain, although, so far as chorea is concerned, he does not forget to mention it. We trust he may pardoned, if for no other reason, at least for the sake of the admirable construction of his first chapter. It is to be regretted, however, that he did not include a chapter on the relation of eye strain to general disorders, or, at least, its relation to various disturbances of functions—a relation which abundant clinical evidence proves is a potent one. It is still more to be regretted that Dr. Noyes did not find time to add a chapter of this character, for no one better than he could have treated this subject with judicial fairness, aided by abundant experience.

The index is wretched—a very serious fault—and sometimes one is obliged to read many pages, and even then unsuccessfully, before coming upon the desired topic, which should have been found at once by reference to a proper index. The translator has evidently followed the original exactly in this respect, but the value of the English translation would have been greatly increased had Dr. Noyes permitted the addition of an index as thorough and copious as the one in his own excellent treatise on disease of the eye. Not without faults—and what book is so fortunate?—this treatise of Professor Knies is a monument of industry—a truly scientific work, and amply sustains its author's assertion that it forms a supplementary volume to every manual and text-book of practical medicine and ophthalmology. G. E. DE S.

ILLUSTRATED DICTIONARY OF MEDICINE, BIOLOGY, AND ALLIED SCIENCES. By GEORGE M. GOULD, A.M., M.D. 1633 pages, fully illustrated. Philadelphia: P. Blakiston, Son & Co., 1894.

MEDICAL literature was enriched during the past year by the completion of Foster's splendid work, by the new and revised edition of Dunglison, by Duane's excellent work, and with the volume under consideration. The first two were well known to the profession ; the former through its early volumes and the latter through many years of distinguished and acceptable merit. Gould's *Dictionary* had been preceded by his smaller works, which had proved most useful to medical students. The present book was adapted for the profession at large, and was completed with an endeavor to give the greatest possible amount of clear and condensed information in a single volume.

We have subjected this book to the test of daily use for more than a year. Our requirements have embraced the knowledge usually desired by practitioners, and important references demanded by especial study and scientific work, and in the literature of a specialty. The book has been to us all that the writer claims, the greatest amount of condensed information readily contained within a single volume. There are various points upon spelling and the definition of terms used in the literature of specialties in which we do not agree with the work of the author, but this does not militate against the value of the book, nor lessen the debt of obligation to which the profession has been placed by the writer.

The publisher informs us that a second edition is in preparation, and this will certainly be welcome in view of the merit of the first.

The publisher's work upon this book, so far as printing and binding go, has been well and clearly done. Most of the illustrations are excellent, and the exceptions are too few to affect essentially the value of the book. The work compares most favorably with the best medical dictionaries of other languages. E. P. D.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,

PROFESSOR OF CLINICAL MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO ST. MARK'S HOSPITAL.

ARGONIN.

DR. ARTHUR LIEBRECHT states that this new silver-salt is prepared from the sodium combination with casein mixed with silver nitrate and treated with alcohol, which throws down a fine white powder which has been named as above. It is easily soluble in hot water, but in cold with difficulty. Meyer believed this drug to possess antiseptic properties of no inconsiderable value. In watery solution, however, this property is less marked than of silver nitrate, but, on the contrary, upon albuminous solutions it is of greater antiseptic value. Hypodermatic injections show that the symptoms of metallic poisoning appear more quickly with this remedy than with the nitrate; whether this is due to the more rapid absorption or to the peculiar combination of the metal is not at present determined. In conclusion, this remedy apparently possesses the bacteriocidal, but is without the caustic, properties of the nitrate.—*Therapeutische Monatshefte*, 1895, Heft 6, S. 306.

THE TREATMENT OF FETID EXPECTORATION BY THE VAPOR OF COAL-TAR CREOSOTE.

DR. ARNOLD CHAPLIN has experimented with the preparation which is used principally for seasoning railway sleepers and telegraph-poles. Its chief constituents are phenates and acridin and pyridine bases, all of which are of high antiseptic value. If heated to near boiling, it gives off a dense, pungent, irritating vapor, causing running from the eyes and nose, and a smarting sensation is felt down the trachea and bronchi. So soon as the vapor gains access to that part of the respiratory tract coughing comes on, and whatever phlegm there may be in the bronchial tubes is expelled. After inhalation the breath has for several hours a distinct odor of the vapor. The properties of this vapor are: (1) it is penetrating and capable of reaching the dilated bronchus; (2) it is irritating, and thereby able to cause, by inducing cough, expulsion of the retained and decomposed matter; (3) it is antiseptic, and may be able to render the bronchiectasis, which it reaches, free from the putrefactive germs which cause the fetor. A nearly air-tight chamber about seven feet square and eight feet high was built outside the hospital and connected with it by a porch. Within this room creosote was vaporized in a flat, open dish by heating with an alcohol-lamp. The inhalations lasted from one-half to one and one-half hours daily for six weeks. By protecting the eyes with watch-glasses framed in adhesive plaster and plugging the nostrils with cotton the irritation was reduced to bearable limits. The effects of these inhalations are (1) upon expectoration. If after a periodic fit of coughing, when it may be presumed that the tubes are empty, an inhalation is made, one is astonished at the large amount of phlegm which is expelled, and this is the phlegm which, under ordinary circumstances, would have remained behind and would have decomposed and become inexpressibly foul. As the treatment progresses the amount of expectoration rapidly diminishes and the fetor entirely disappears; (2) the chest feels freer and less clogged, and more air can be drawn into the lungs; (3) the dyspnœa diminishes, and staircases are mounted with ease; (4) the appetite returns, the tongue becomes cleaner, the strength increases, the temperature-curve ceases to be hectic, and the pulse becomes less frequent; (5) on auscultation the evidences of bronchiectasis, which were difficult to establish because of the retained phlegm filling the cavity, are less marked, and there are now heard, almost continually, hollow breathing-sounds with but few bubbling râles. He concludes: (1) The usual treatment of fetid expectoration is unsatisfactory, and, as a rule, leads to but little permanent benefit. (2) The onset of fetor in the phlegm is sufficiently grave to demand a trial of any new method of treatment. (3) The form of treatment upon which this paper is based offers a prospect of amelioration, or even cure, to the victim of this complaint such as will favorably compare with other ways of dealing with it. (4) The application of the method is easy, attended with no danger, and cheap, a gallon of creosote costing less than twenty cents.—*British Medical Journal*, 1895, No. 1799, p. 1371.

THE USE OF CREOLIN-INUNCTIONS IN LARYNGEAL TUBERCULOSIS.

DR. SCHADEWALD reports a patient who presented a limited pulmonary tuberculosis, and upon whom he demonstrated two healed and one existing ulcer of the larynx. He made use of good (not old) cresol (ortho-cresol), the total amount employed being about seven ounces, which was energetically rubbed into the body, each application lasting from fifteen to twenty minutes. It is well to incorporate lanolin with it to prevent adhesions to the linen, which would cause cutaneous irritation. During the treatment the ulceration disappeared.—*Berliner klinische Wochenschrift*, 1895, No. 24, S. 529.

THE TREATMENT OF TYPHOID FEVER.

DR. C. A. RAY reports eighty-one cases with three deaths. The treatment consisted of an initial dose of calomel, which was followed within twenty-four hours by a reduction of temperature. Hydrochloric acid was given with a pepsin preparation in all cases. Salol, enteric creosote pills, and quinine in solution were used where intestinal antiseptics were indicated. Ice-water was given as much as the patients wished to drink. Constipation was treated by enemata of warm water. No laxatives were administered excepting in cases where the diarrhœa did not respond to ordinary remedies and the presence of foreign matter was suspected. Brandy, strophanthus, and strychnine were used to combat heart-failure. In most cases the temperature was reduced by baths and iced-water enemata; in some of the more robust, acetanilid, phenacetin, and antipyrin met the same indication. The diet was almost exclusively peptonized or sterilized milk.—*New York Medical Record*, 1895, No. 1280, p. 615.

DR. A. G. HENRY insists upon a quiet, fair-sized, well-lighted room. He withholds food of all description for from four or five days to two weeks, depending upon the behavior of the fever and the condition of the bowels. Milk boiled for ten minutes is then used, beginning with a tablespoonful three times daily and increasing the amount until a half-cupful is taken at a time, but no more than this amount is given until several days after the last vestige of the fever has disappeared, when other articles may be gradually substituted for the milk. The patient should be bathed every two to six hours in water of a temperature of from 75° to 90° F., the higher the fever the lower the temperature of the water to be employed. Of the drugs employed, aconite in small doses is useful, and if there is persistent headache belladonna may be useful. For the diarrhœa five drops of the fluid extract of *baptisia tinctorium* may be combined with the aconite. Large quantities of pure soft water, cold or hot, are absolutely essential to the successful management of the disease. During twenty-one years but two patients have died of intestinal hemorrhage, and during the past seven there has not been a single fatal result, fifteen to twenty-five patients being under observation each season.—*Ibid.*, No. 1281, p. 646.

GUAIACOL IN TYPHOID FEVER.

DR. JAMES STRATTON CARPENTER proposes this remedy used epidermatically for the reduction of temperature. He is positive in his declaration that it is an undoubted aid in the lowering of high temperature, and whatever unpleasant symptoms may arise from its use need not be considered, under proper care, as tending to more than temporary discomfort, while necessary attention to the simplest rules of nursing will avoid them altogether. About forty cases were under observation. The site for the application was usually the epigastrium. In some cases the continued application was followed by a dermatitis, but this was exceptional. The rubbing-in process being completed, a layer of cotton was held in place over the spot, and within half an hour the effects of the application would generally begin to manifest themselves in a more or less profuse perspiration, followed by an appreciable fall of temperature, which in turn was followed by a rise within varying periods of time. Thirty-five drops were the maximum dose employed, the usual one being fifteen to twenty drops; but when this was shown to be insufficient the dosage should be gradually increased until a temperature-fall occurs. There is no limit as to the frequency of employment. There is no fear of collapse, and robust cases were not selected for the exhibition of the remedy. Urgency of symptoms only is the guide to frequency of dosage. As adjuncts to the use of this remedy quinine, phenacetin, alcohol, and cold water have been used. Of these, cold water gave the best results when employed in the form of light spongings. No complaints were made as to the taste of the drug, nor was there noted any odor of the breath nor of the urine, therefore there are no data as to its elimination in these particular cases.—*Therapeutic Gazette*, 1895, No. 6, p. 369.

Spermine Solution.

Dr. George E. Krieger defines this substance as a physiological tonic in all cases of depressed or exhausted conditions. The clinical reports are upon asthma, one instance of relief of this symptom; anæmia and dyspepsia, two successful cases; chorea, two cases; diabetes and Bright's disease, improvement noted; bronchial catarrh, several patients relieved; tuberculosis and other infectious diseases, greatly improved; typhoid fever, malaria, pneumonia, beneficial results; syphilis and chronic ulcers, cured or benefited; neurasthenia and neuralgia, pronounced effects; locomotor ataxia and spinal degenerations, no satisfactory results. The dose is from five to ten minims (adults), three to six minims (children), hypodermatically, increasing one minim each day until the full dose of fifteen minims is reached. The site of the injection is not important so long as strict asepsis is observed. No untoward effects follow, and the treatment should be continued for at least two weeks before any conclusion may be made as to its value.—*The American Therapist*, 1895, No. 12, p. 312.

The Treatment of Chlorosis.

Dr. Potain states that the usual indications are: general stimulants, salt-baths, sea-bathing, dry douches, moderate physical exercise, intellectual work according to the condition of the patient, avoidances of nervous excitement, emotions, marriage being far from beneficial. Iron should be given in addition to the food, which should be strengthening. The phosphates or glycero-phosphates can be administered. The cardiac disturbances, as palpitation and dilatation, should be treated, the former by sodium bromide, valerian, and camphor; the latter, which frequently depends upon dyspepsia, by a well-chosen and regulated diet. In painful dyspepsia, when drugs are badly borne, soluble iron-preparations, or iron mineral-waters, or, in extreme cases, hypodermatic injections, or even injections of defibrinated blood, should be employed. In atonic dyspepsia, with deficient hydrochloric acid, the alkalies, or careful hygiene alone, can render good service; suppress alcohol and wines. Inhalations of oxygen may be useful. In chronic gastric repletion, with dilatation of the stomach, lavage, or in addition electrization, the negative pole in the stomach, can be employed. In dyspepsia with loss of appetite, a very serious symptom, change of scene is best, but this cannot always be relied upon. For neuropathic chlorotics of the atonic variety, gymnastics, voyages, and exercise must be advised. For those of exaggerated excitability, repose, even in bed, limited alimentation, avoidance of fatigue, country rest are important. For chlorosis complicated by other conditions the latter must be attended to. If with this we have tuberculosis, the treatment is important; arsenic and manganese are to be used. If the tuberculosis is congestive, the danger is imminent, and the congestion must be subdued. In the torpid varieties iron renders good service. In chlorosis complicated by aortic insufficiency the blood must be built up. If by mitral obstruction the chlorosis exaggerates the cardiac symptoms—and that is the greater reason for treating the disease—iron in these cases succeeds very well.—*Bulletin Général de Thérapeutique*, 1895, 22e liv. p. 307.

CANCER AND SERUM-THERAPY.

DR. CH. ELOY critically reviews the papers which are familiar to readers of current literature. Practically there are two methods of procedure against cancer: (1) the streptococcal by erysipelas-serum, (2) the anticancerous by the Krebs-serum. Accidents from the use of the methods and failures have been published, and the brilliant results which have been announced have been neutralized by the testimony of other observers. Doubtless insufficient time has been allowed to elapse before the publication of their results. So far as developing a theory for the action is concerned, Kronacker has shown that incidental inflammatory processes often have a favorable influence upon the infectious processes of the cancer. Domergue has also shown that inflammation can diminish the development of cancerous tumors. This is the explanation of the temporary improvement obtained with caustics, phosphorated oil, picric acid, zinc chloride acting somewhat upon the diseased as upon the healthy tissues; with aniline derivatives, pyoctanin, methylene-blue producing momentary retrogressions; with essence of turpentine producing a local inflammation without febrile reaction, without general infection, and with some benefit. There is nothing to prove that cancer is of bacterial origin; this theory arose from the necessities of serum-therapy. The clinical facts more or less favorable to the serum-therapy of cancer are hardly numerous. The least unfavorable are moderately conclusive. As for the experimental results, it is difficult to draw conclusions from them. Without other proof we are not justified in ascribing specific properties to the erysipelas-serum or to the Krebs-serum. In these, as in other matters of therapeutics, it is necessary to have great circumspection and to act in good faith.—*Journal des Praticiens*, 1895, No. 24, p. 372.

THE TREATMENT OF STERILITY.

DR. GUSTAV LOIMANN recommends very highly the carbon-dioxide baths. Although these baths have come down to us from antiquity, yet their simplicity and ease of application have not been conducive to their employment. These baths increase the sexual excitability, especially in women, and are a valuable remedy for amenorrhœa or deferred menstruation. The use of natural carbon-dioxide baths is easy and pleasant. The clothing should be so arranged that it will not embarrass respiration, and the lower part of the body is immersed The immediate result of the bath is a feeling of warmth and a peculiar sensation in the genitals. The duration of the bath is from eight to fifteen minutes. In special cases the mud-bath may be combined with these.—*Therapeutische Monatshefte*, 1895, Heft 6, S. 295.

PSORIASIS TREATED WITH OIL OF COPAIBA.

DR. J. ABBOTT CANTRELL reports two cases which demonstrate the good results which may be obtained by the use of this remedy. The amount used was five minims in capsules three times daily. In addition good nourishing diet and free access to open-air exercise were prescribed. In both instances the disease was of long standing, and had been shown to be rebellious to several methods of treatment.—*Therapeutic Gazette*, 1895, No. 6, p. 368.

THE FIRST AID IN POISONING.

DR. L. LEWIN notes that there must be considered: (1) that the poison shall be rapidly and completely removed from the body; (2) that it, so far as may be, shall be so chemically changed that it temporarily or permanently loses its harmful properties; (3) that the functions of single organs or of the entire body disturbed by it shall be restored by proper remedies. To remove the poison from the body the stomach-tube offers the fewest objections and possesses many advantages; and with a bulb-attachment (such as is found in this country on the Davison syringe) thorough washing out of the stomach can be carried out. The water which is used may be impregnated with various substances according to the poison ingested; *e. g.*, copper sulphate for phosphorus, magnesium sulphate for carbolic acid, lime-water for oxalic acid, zinc sulphate for lead acetate, diluted lead-solution for chromic acid. Marked pain may be relieved by solution of cocaine (0.05 to 0.10 in 1000 of water). If the tube cannot be passed because of swelling of the parts, emetics are necessary. Oily or fatty remedies or large quantities of fluids (warm water) should not be employed lest the solubility of the poison be increased. As permissible emetics only three are mentioned: good powdered mustard (two to two and one-half drachms in a glass of water), copper sulphate (fifteen grains), or apomorphine hydrochlorate (one-third of a grain), the last given hypodermatically. For those poisons which are insoluble in the stomach, but soluble in the intestines, Rochelle salt in from 150 to 300 grains dissolved in water is the best antidote. When the poison is circulating in the blood every effort should be made to prevent the destruction of the blood-corpuscles and the subsequent blocking up of the renal tubules. For this purpose the solution of potassium acetate, or, better, potassium and sodium boro-tartrate (tartarus boraxatus), 1 to 20 of water, should be placed in the stomach. To make the poison chemically inactive the neutralization of acids by alkalies, of alkalies by acids, phosphorus by copper sulphate, oxalic acid by lime-water, should be done; but if the poison is circulating in the blood, this chemical reaction is not likely to take place. To combat the symptoms which are usually urgent, as advancing heart-failure, disturbance of respiration, commencing cerebral paralysis, severe cramps, and changes in blood-corpuscles, various methods are of necessity employed. To stimulate the heart the use of the rectum is preferable to subcutaneous medication. Ammonia (30 drops in a glass of water), alcohol (a teaspoonful of brandy in a glass of water with a little mucilage of gum-arabic), oil of camphor (one-half to one teaspoonful in an indifferent oil), and coffee-injections may be employed. When the respiration is interfered with, a stream of cold water projected from a height against the neck of the patient, who is protected from further wetting by a handkerchief about the lower part of the neck, is the quickest and safest restorative. The various methods of artificial respiration, or Laborde's tongue-traction, may be useful. For cerebral paralysis forced walking (ambulatory treatment), mustard with lukewarm water to neck, feet, or stomach, ammonia-water, even vesication, are employed. Of internal remedies, tincture of musk hypodermatically holds the first place. Camphor-solutions, small doses of strong wine or brandy, or coffee-infusions by the rectum are serviceable. For cramps, the anæsthetics, as ether and chloroform, are useful; in strychnine-poisoning the latter is especially so, and should be continued until the poison is completely removed from the body. Chloral, because of its paralyzing effect upon the heart, is particularly to be avoided. The changes in the red blood-corpuscles may be antagonized by venesection and transfusion of double the quantity removed of six-tenths per cent. of sodium-chloride solution, to which one-tenth of one per cent. of soda is added.—*Berliner klinische Wochenschrift*, 1895, No. 24, S. 513.

POTASSIUM PERMANGANATE.

DR. WILLIAM MOON shows that this drug decomposes morphine sulphate much more rapidly than it does albuminous matter, so that, when ingested, the contents of the stomach will not reduce it so quickly that it becomes useless for antidotal purposes. In case of poisoning by any of the morphine-salts eight or ten grains of this drug should be dissolved in a pint of water and administered at once; this amount should be repeated at intervals of thirty minutes once or twice. If the alkaloid morphine (not its salts) or opium or any of its preparations have been taken, it is advisable to acidulate the antidotal solution with one or two teaspoonfuls of diluted sulphuric acid or white (not red) vinegar, by which the insoluble morphine will be converted into its sulphate or acetate. The amount of antidote to be used depends upon the amount of poison which has been taken, generally one grain more than of the poison. If swallowing is impossible, in order not to increase the existing cerebral congestion by the use of the stomach-tube a hard-rubber catheter can be introduced into the œsophagus by way of the nose. To this can be attached a piece of soft-rubber tubing fitted with a funnel into which the solution can be poured; even after all of the opium or morphine which is in the stomach is supposed to have been rendered inert, a weak solution, one grain to the tumblerful of water, should be administered by the mouth because of the elimination of the poison, which is in the circulation, into the stomach. [*See* AMERICAN JOURNAL OF THE MEDICAL SCIENCES, vol. cix. p. 80.—R. W. W.] The hypodermatic injection of the antidote is also of benefit; although a part of the potassium permanganate is reduced by the subcutaneous tissues, yet enough finds its way into the circulation to select the morphine which is circulating in the albuminous constituents of the blood. As regards other alkaloids and inorganic poisons, several hours' contact with atropine, hyoscyamine, hyoscine, cocaine, aconitine, veratrine, pilocarpine, muscarine, caffeine, and phosphorus produced no oxidizing effect. While no reaction follows the contact of hydrocyanic acid with the drug, the latter immediately decomposes potassium cyanide. It will give up its oxygen much more quickly to albuminous matter than to strychnine, oxalic acid, and colchicum preparations. With eserine the results are the same as with morphine, therefore to opium and calabar bean it is a positive antidote. Thus far thirty-five cases of opium-poisoning have been successfully treated by this method.—*The British Medical Journal*, 1895, No. 1799, p. 1369.

DIGITOXIN.

M. G. CORIN notes the varying activity of the various commercial digitalins, and the skepticism with which the announcement of a new active principle is received. Schmiedeberg has isolated four non-nitrogenous active principles—digitonin, digitalin, digitalein, and digitoxin—of which the first three are glucosides and the last three act upon the heart after the manner of digitalis. Unfortunately, the digitalin and digitalein are difficult to obtain pure, and digitoxin is almost insoluble in water. The last presents all of the valuable properties of digitalis; it increases the volume of the pulse, raises the blood-pressure from its stimulation of the myocardium, slows the pulse-rate from its action upon the inhibitory apparatus, both central and peripheral. Personal experiences with this drug in dose of one-sixteenth of a grain demonstrated disagreeable phenomena, but never alarming ones. There was a marked slowing of the pulse, which naturally was of increased tension, and nausea and vomiting, which lasted but a few hours. The formula which is employed is: digitoxin, one-sixty-fourth of a grain; chloroform, ten minims; 90 per cent. alcohol, one drachm in an ounce of distilled water, this representing one dose. This solution does not precipitate with water, nor with normal saline solution. Masius has clearly shown the superiority of digitoxin above the commercial digitalins and preparations of digitalis in the treatment of cardiac asthenia and pneumonia. The author has given the theoretical reasons and practical facts which go to show that digitoxin has a real abortive action upon pneumonic infections. As these observations increase in number the practical physician will substitute this active principle for the preparations of digitalis, which are of varying activity and which may even be dangerous.—*Les Nouveaux Remèdes*, 1895, No. 9, p. 196.

DISINFECTION BY FORMALDEHYDE.

DR. G. BARDET confesses to considerable skepticism as to the possibility of absolute scientific sterilization of the more virulent germs resulting from the inoculation of cultures which are notoriously pathogenic and which are previously placed where disinfection is to be later performed. Hitherto he has considered this problem unsolvable. However at the present time making use of this remedy, also known as formal, in solution with methyl alcohol, and in an apparatus devised by Trillat, a different opinion is entertained. Practical experience has demonstrated that continuous operation of this apparatus in a closed room results in thorough disinfection, which has been proved by bacteriological cultures. The action of formal on wood, metals, and hangings is practically *nil.* The drug penetrates to a considerable extent; it impregnates furniture and bedding, as is shown by the presence of its peculiar odor. This odor can be removed by thorough ventilation, by entering the room six hours after the completion of the operation, for the purpose of opening the windows. Within a quarter of an hour or more the air can be breathed, but should the room be again closed the formal which has impregnated the walls will be disengaged and the air will again become irrespirable. It is better, then, to allow a current of air to circulate through the apartment for twenty-four hours; at the end of this time the odor will have completely disappeared. In case of necessity, an aëration of four hours will be sufficient to render the room habitable.—*Les Nouveaux Remèdes*, 1895, No. 10, p. 219.

MEDICINE.

UNDER THE CHARGE OF

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Displacements of the Liver.

Graham (*Canadian Practitioner*, June, 1895) states that within certain limits the liver is freely movable, and that in women with pendulous abdomens it may descend one inch below its normal position without causing any unpleasant symptoms. Cases with marked undoubted displacement of the liver are rare, however.

A short account of the literature on the subject is given, also a representation of Heister's remarkable case, published in 1754, in which the normal transverse diameter of the liver had become practically vertical. In 1892 Faure published fifty-four cases collected from the literature. Since then several others have been reported, and these have been collected, making a total of seventy cases, which are given in tabulated form.

The author is of the opinion that the recorded cases might be divided into two classes: (1) the wanderleber of the Germans, fegato ambulante of the Italians, floating liver, a condition found in women with pendulous abdomens, usually after frequent childbearing; (2) cases in both males and females in which the causes of displacement are varied.

Floating liver is a comparatively rare condition, any marked degree of mobility of this organ being prevented by the number and strength of its ligaments. The ligaments are in all probability of sufficient strength to carry the full weight of the liver without the aid of the abdominal wall. This the writer has demonstrated in the majority of a series of experiments on the cadaver, the details of which are given. The strength of the ligaments of the liver are further shown by the results of several experiments which Faure conducted, in which he found that it took a weight twenty-five times that of the liver in order to rupture them.

Graham reports three cases which occurred in his practice, one of which illustrates well the great relief to the symptoms produced by hepatic displacement by the use of a properly applied abdominal support. In this case relative hepatic dulness did not begin till the seventh rib in the mammillary line was reached, and the lower border of the liver was distinctly palpable two inches below the umbilicus. The patient complained of a weight in the abdomen, dyspnœa, and was very cyanotic. These symptoms were relieved by an abdominal bandage, always returning whenever it was removed.

Winkler is quoted as giving the following causes for hepatic displacement, one acting in succession to the other: (1) Pregnancy of full term; (2) pendulous abdomen; (3) hepar pendens; (4) stretching of the ligaments; (5) tearing and twisting of the suspensory ligaments. Rapid emaciation and disappearance of the abdominal fat are considered by Landau as causes of displacement. Other etiological factors which have been mentioned are coughing, sneezing, vomiting, and tight-lacing, the latter, however, tending more to produce a change in form rather than a change in position of the organ. Repeated pregnancies in women, producing pendulous abdomens, seem to be an important etiological factor. Of the cases recorded a synopsis shows that males and females are affected in the proportion of one to four. Displacement comes on later in life in females than in males.

The symptoms usually complained of by patients are a feeling of weight in the abdomen and a dull pain on exertion. A few instances have been recorded with a sudden onset of symptoms, which were those practically of shock. Other symptoms which have been noted are dyspnœa, cyanosis, nausea, vomiting, and, in some cases, jaundice. An examination of the abdomen should show the presence of a tumor, which can be easily felt and which resembles the liver in size, shape, and consistence. There should be tympanitic resonance over the area where hepatic dulness normally exists.

The conditions for which a floating liver is most likely to be mistaken are typhlitis, ovarian cyst, movable right kidney, and hydronephrosis. The former condition should be distinguished by the following points: (1) The tumor having an upper smooth surface and a sharply defined anterior border and notch; (2) tympanitic resonance over the normal area of liver-dulness; (3) possibility of partial or complete replacement, when dulness will be found in the normal area.

Greatest relief to the symptoms seems to have been obtained by the use of a properly applied abdominal support. Cases of operation with recovery are reported.

BACTERIA IN THE HEALTHY NOSE.

THOMSON and HEWLETT in a recent paper demonstrate the fallacy of the generally accepted idea that the healthy nasal cavity is rich in microorganisms.

The authors made no attempt to differentiate the varieties of organisms found, but simply considered their number.

In making their research they differentiate between the vestibule, which is lined by skin and contains hairs and sudoriparous and sebaceous follicles, and the nasal cavity proper, which is lined by mucous membrane.

In the vestibule micro-organisms were never absent, and generally abundant.

From the Schneiderian membrane eighty per cent. of the cultures were sterile, showing that the presence of micro-organisms in the nasal cavity is the exception.

Considering that at a conservative estimate 500 litres of air bearing 1500 organisms are inspired every hour, the authors find it difficult to explain this sterility of the nasal cavity ; they are of opinion that many organisms are arrested by the vibrissæ in the vestibule and a few removed by phagocytosis.

The protective power of the ciliated epithelium and the microbial action of the nasal mucus were also suggested as possible explanations.—*Lancet*, June 1, 1895.

MIXED LUNG-INFECTION OF ASPERGILLUS AND TUBERCLE BACILLUS.

RÉNON and SARGENT report the results of the autopsy on a case of mixed infection of the aspergillus fumigatus and the tubercle bacillus occurring in a pigeon-feeder.

The patient died of progressive asphyxia, and was not cachectic. The lungs showed much thickened pleuræ and a great deal of fibrous change. Scattered throughout the lung-substance were numerous small nodules which looked like tubercles, but which, microscopically, were found to be made up of masses of cubical cells containing neither lymphoid nor giant cells and surrounded by sclerotic tissue.

Besides these areas there were others of a caseous nature containing a few giant cells.

Neither the aspergillus nor the tubercle bacillus was found in stained sections.

The writers had followed the case from its onset, and conclude from observing this case and reviewing the literature that in similar cases of mixed infection the aspergillus first attacks the lung and paves the way for the tubercle bacillus ; when the latter has gained a foothold the aspergillus disappears, leaving a very chronic form of tuberculosis, with a strong tendency to the formation of fibrous tissue and the disappearance of the bacilli.—*Compt. Rendus de la Société de Biologie*, May 3, 1895.

GRAVE ICTERUS DUE TO PROTEUS INFECTION.

BAR and RÉNON report a case of fatal icterus in a newborn baby whose mother was manifestly syphilitic.

The child was born apparently healthy, but fever appeared on the second day after birth, followed the next day by icterus, which rapidly increased in intensity, the child dying on the fifth day.

At the autopsy a large liver, containing numerous gummata in an early state, was found.

Cultures from the liver, spleen, and heart's blood gave a single organism corresponding in every way to the proteus vulgaris. Sections of the liver showed the intracellular spaces to be crowded with the same organism.

The authors consider the icterus, judging by the course of the disease, to have been due to the infection and not to the hepatic syphilis, and call attention to the analogy between this case and cases of Weil's disease due to the proteus.—*Comptes Rendus de la Société de Biologie,* May 24, 1895.

THE PRESENCE OF THE TUBERCLE BACILLUS IN THE BLOOD OF THE UMBILICAL VEIN OF CHILDREN BORN OF TUBERCULOUS MOTHERS.

BAR and RÉNON have recently, in five cases where children were born to tuberculous mothers, collected at the time of birth small quantities of the blood flowing from the placenta, which they inoculated into guinea-pigs.

In two of these cases, in both of which the tuberculosis in the mother was far advanced, the results were positive, the animals dying with marked local tuberculosis and also tuberculosis of the internal organs. The bacilli of tuberculosis were recovered from the seat of inoculation in each case. Of the three unsuccessful cases, in two the tuberculosis in the mother was mild and in the third severe. The children in these cases lived and were healthy.

In the positive cases, one child was born dead and the other died shortly after birth of pneumonia. The placenta in both cases appeared normal, and in the case of the dead-born child no appreciable visceral lesions could be made out, though inoculation of pieces of viscera caused tuberculosis in the guinea-pig.—*Comptes Rendus de la Société de Biologie,* July 5, 1895.

PLEURITIS DUE TO THE PROTEUS VULGARIS.

CHARRIN and NOBÉCOURT report the case of a woman seven and a half months pregnant who developed a left-sided pleurisy with severe dyspnœa and grave general depression. The physical signs indicated a small amount of fluid, and exploratory puncture confirmed the indication. The fluid withdrawn was purulent, and had a stale, nauseating, fetid odor; it contained gas and a bacillus which culturally corresponded in every way to the proteus vulgaris.

The patient gradually sank, abortion took place, and death a few hours later.

The child gradually lost weight, and twenty-nine days after birth weighed fifty grammes less than it did at the time of birth.

The autopsy on the mother showed nothing to account for the fatality of so small a pleural effusion, and the authors account for it by the decreased resistance due to pregnancy and the absorption of the toxic products of the proteus, which they consider of a very virulent nature.

The wasting of the child they consider due to poisoning from absorption of toxins from the mother.—*Compt. Rend. de la Société de Biologie,* June 21, 1895.

THE GOULSTONIAN LECTURES ON THE SUPRARENAL BODIES.

ROLLESTON (*Brit. Med. Journ.*, March 23 and 30, April 6, 1895) dealt with this subject very fully in three lectures, delivered before the Royal College of Physicians of London. The author first describes the special conformation of each gland and its relation to the surrounding structures. Accessory suprarenals not uncommonly occur either in the surrounding connective tissue or less frequently imbedded in the substance of the kidney or liver, in which case the term "rests" has been applied to them.

The histology of the gland is described. In origin the cortex is supposed to be derived from the mesoblast or the Wolffian body, whilst the medulla is regarded as having the same origin as the sympathetic system, on account of its containing ganglionic cells. The author regards the gland as a functional whole, the cortex and medulla doing the same work, but in unequal degrees. Schäfer and Oliver hold, however, that the medulla alone yields the active principle of the extract.

Atrophy of the suprarenals occurs normally in old age, but may occur earlier in life and cause Addison's disease. Hemorrhage into the substance of the gland may be due to traumatism either late in life or in infants at birth. Fatty and lardaceous degenerations occur, and the glands have been found to contain cysts. Rolleston had examined the suprarenals at 1050 autopsies; in 131 cases death was due to tuberculosis, and in 18 instances the glands were tuberculous, without, however, there being any signs of Addison's disease. Children up to ten years of age seemed to be immune to adrenal tuberculosis. Of simple tumors adenomata are most common. The "rests" may undergo the same change. Sarcomata and carcinomata occur primarily, the former being the commoner. Here, again, the "rests" may become sarcomatous, and thus cause sarcoma of the kidney or liver. Secondary sarcoma and carcinoma of the adrenals also occurs.

Brown-Séquard experimented on animals and found: (1) that the adrenals were essential to life; (2) that suppression of their function was more rapidly fatal than suppression of the secretion of urine; (3) that they modified or destroyed a substance which otherwise transformed itself into pigment and which collected in the blood; (4) that the blood of an animal from whom the glands are removed becomes poisonous and often proves fatal when injected into other animals of the same species. A number of writers hold that Addison's disease is due to an affection of the sympathetic system, and claim that where the adrenals are found to be diseased the symptoms are really due to involvement of the sympathetic nerves in their vicinity. Tizzoni claims that the symptoms produced by the removal of the suprarenals are not due to the cessation of their function, but really to the injury of the sympathetic nerves during the operation.

Schäfer and Oliver have found that injection of the extract of the glands produces (1) a rise in blood-pressure due to arterial constriction; (2) a marked inhibition of the heart, acting through the vagus; (3) a paresis of the muscles, with absence of knee-jerks.

Wilks holds that the lesion of the suprarenals in Addison's disease is very constant; he considers it a primary inflammation, comparable to hepatic cirrhosis. Tuberculosis of the adrenals is considered the most common cause of Addison's disease, although well-authenticated cases have shown the adrenals to possess other lesions. The spleen and the lymph-follicles of the stomach and intestine are generally found enlarged in this disease. The pigmentation in Addison's disease is really an exaggeration of that normally found, the pigment being present in the stratum Malpighii and in the dermis in the "carrier cells," which probably convey it from the bloodvessels to the epidermis. Pigmentation of the mucous membranes was considered a more valuable diagnostic sign than cutaneous bronzing.

Three theories were held as to the cause of Addison's disease: (1) that it was due to a lesion of the sympathetic system; (2) that the adrenal glands were excretory, removing effete blood-pigment and toxins from the circulation; (3) that their function was secretory, the glands producing some fluid which was necessary to the economy; the interference with the function in the latter two cases producing Addison's disease. The author summed up the arguments in favor of each theory, and stated that the first two were untenable, but was strongly in favor of the view that the function of the suprarenals was excretory.

Treatment of Addison's disease with suprarenal extract had been on the whole satisfactory. Rolleston did not think a quantity of the extract equivalent to two glands daily was too much. Dr. Oliver thought that the extract might be a good hæmostatic in hæmophilia, purpura, etc.

The Urine in Carcinoma.

Duplay, Cazin, and Savoire, in a recent research on the state of the urine in carcinoma, come to entirely different conclusions from Rommelaere, who has insisted on the decrease of urea and phosphates in this disease, independent of alimentation.

The authors conclude that decrease in excretion of urea is not constant in the subjects of carcinoma, and only occurs when the patient can no longer assimilate food. As long as nutrition is assured by a suitable diet excretion of urea is normal even when the carcinomatous lesion is advanced; when alimentation is diminished, however, the excretion of urea is diminished considerably. The decrease in excretion of urea then cannot be considered as symptomatic of cancerous affection, but simply as one of the manifestations that may accompany the cancerous cachexia when the assimilation of food is faulty.

The decrease in excretion of phosphates also is not at all constant in cancer, and does not, any more than the decrease in urea, constitute a diagnostic element.—*Archives Genérales de Médecine*, July, 1895.

Leucocytosis in Pneumonia.

Stienon has recently made an exhaustive study of the number and character of the leucocytes in acute pneumonia. He takes up first the question of number, and comes to the conclusion that in most cases the number varies considerably, the increase, as a rule, disappearing with the increase of fever.

With regard to the morphology of the leucocytes he concludes that in the febrile stage the polynuclears predominate, the eosinophiles being very scarce. After the crisis the small mononuclear elements increase greatly. In case of slow resolution the polynuclears remain increased.

As soon as the polynuclears begin to diminish the eosinophiles increase, this increase occurring early in mild cases, and being slight or wanting in cases of suppuration.

Though the polynuclear variety of leucocytes predominates during the period of leucocytosis as a rule, in certain cases the young forms predominate, this condition persisting during convalescence and often being accompanied by an increase in eosinophiles.

The author has been unable to observe a decrease in leucocytes preliminary to the leucocytosis.—*La Presse Médicale*, July 13, 1895.

Parotitis Secondary to Gastric Ulcer.

In a recent article on secondary parotitis **Hawthorne** reports two cases in which this affection followed gastric ulcer.

In the first case, a female, aged forty-two years, had had constant epigastric pain and almost constant vomiting for three weeks, and a free hematemesis on the morning of admission to the hospital. Previous health had been good except for slight gastric disturbances. Under appropriate treatment the symptoms subsided, but two weeks after admission pain and swelling of the right parotid gland developed with a temperature of 101° F. In forty-eight hours the temperature fell to normal, however, and the swelling disappeared without suppuration.

In the second case, a female, aged twenty-six years, was admitted to the hospital on account of severe hematemesis extending over twenty hours. The hematemesis occurred again three days after admission, and was followed by melæna.

Four days after the second hemorrhage evidence of right parotitis appeared with temperature of 101.8° F. Slight improvement in the local condition occurred under treatment, but in a few days pain and temperature returned and fluctuation was detected in the swelling. The pus was evacuated and the stomach-symptoms disappeared, the patient making a rapid recovery.

The author comments upon the rarity of this complication, and has been able to find only one case where there was even a suspicion of gastric ulceration, this case being doubtful.—*Glasgow Medical Journal*, July, 1895.

Paralysis of the Larynx in Typhoid Fever, Diphtheria, and Influenza.

To the scanty literature concerning post-typhoid laryngeal paralysis **Lublinski** adds a note on six cases observed by himself (*Berliner klinische Wochenschrift*, 1895, No. 26). In four cases men, in two women, were affected. In one severe case paralysis came on in the fourth week; in the others after defervescence, as in most cases previously reported. In one case a right-sided recurrens paralysis followed pleuro-pneumonia (Schroetter has observed a similar case). Usually, however, the exact causes of the paralysis are obscure. The course in mild cases is favorable, but in double paralysis of the abductors the prognosis is unfavorable and the patients are usually obliged to use the canula. The diagnosis can only be made by laryngoscopic examinations, as hoarseness and dyspnœa may be attributed to disease of the mucous membrane or cartilages. In some cases it is difficult to distinguish between the inflammation of the crico-arytenoid articulation with fixation of the arytenoid, especially as redness and swelling may be slight. Of Lublinski's cases the abductors were paralyzed in two, one recurrent in three, both recurrent nerves in one case. The most serious is paralysis of the abductors, which causes obstruction of breathing and often necessitates tracheotomy. Usually the condition comes on in convalescence, with inspiratory dyspnœa, but without alteration of the voice. In one case of paralysis of the recurrent nerve the soft palate was also paralyzed, and in another there were paraplegia and loss of reflexes, without anæsthesia. Lublinski also reports some cases of diphtheria treated by antitoxin, in which paralysis occurred very early, the palate being paralyzed in one case on the ninth day, the lower extremities on the twelfth in another. A case is reported in which a patient, a man of forty-three years, convalescent from influenza, became aphonic on the tenth day. Examination showed slight redness of the laryngeal mucous membrane and paralysis of the left vocal cord (posticus). This disappeared in four weeks, after electrical treatment.

The Patellar Reflex in Diabetes Mellitus.

Grube (*Berliner klinische Wochenschrift*, 1895, No. 23), in reporting the conditions in thirty-nine new cases of diabetes, gives the following conclusions: 1. The knee-jerk may be absent in mild or in severe cases of diabetes mellitus. 2. The absence of the reflex is not so frequent as many authors claim. In order to test the reaction it must be tried repeatedly, with all possible precautions. Frequently the reflex is only obtained after two or three trials, especially in women. 3. The influence of age is not certain, but the reflex seems absent more frequently in persons above the age of fifty years. 4. The absence of the reflex is possibly due to a mild inflammation of the sciatic nerve (Eichhorst). This process does not depend on the character of the diabetes, as severe peripheral neuritis may appear in mild cases of diabetes. 5. The absence of the patellar reflex has no prognostic importance. 6. The knee-jerk sometimes remains up to the last in fatal diabetic coma.

Alimentary Glucosuria in Functional Neuroses, Phosphorus-poisoning, and Atrophy of the Liver.

Von Jaksch (*Prager med. Wochenschrift*, 1895, No. 27) calls attention to the importance of alimentary glucosuria in the diagnosis of certain diseases, the most important being "grande hystérie" and traumatic neuroses. The glucosuria can be called forth in these cases by giving the patient one hundred grammes of grape-sugar at one dose and examining the urine up to the end of six hours. Within this time (as well as later) the sugar cannot be found in the urine of healthy people nor in that of patients with various diseases other than those named. Von Jaksch has examined with negative results over one hundred patients, including those with tabes dorsalis, syringomyelia, chorea, multiple neurosis, and various forms of myelitis. In the other diseases the sugar is found in the urine, sometimes in large quantities. The urine must, of course, be tested before giving the grape-sugar in order to determine the absence of glucosuria. Exceptions to the rule in a case of syringomyelia and a case of chorea in pregnant women led to experiments which showed that in ten out of sixteen other pregnant women glucosuria could be produced by the injection of the dose mentioned. The amount of sugar excreted in the urine varied greatly in different cases.

NERVE-LESIONS IN HERPES ZOSTER.

EBSTEIN (*Virchow's Archiv*, Bd. 139, H. 3) reports a case of herpes zoster with facial paralysis and another with sensory disturbances, and gives some interesting results of an investigation of the subject. He agrees with the view of Recklinghausen, that there is a primary affection of vasomotor nerves, the vasodilators being irritated, and he looks on the herpes as an intense angioneurotic disturbance which may be associated with diseases of the motor or sensory, spinal or cerebral, nerves. The rare appearance of herpes in cases of motor disturbances, and the cause of the paralytic phenomena in motor nerves and of symptoms of irritation in sensory and vasomotor nerves, cannot be explained. In most cases the disease results from causes acting on the body in general, though trauma and cold may assist. It is possible that infection or auto-intoxication plays a part. The tendency of certain parts of the nervous system to herpes zoster may be due to predisposition of these parts to the special exciting causes.

INTESTINAL ANTHRAX.

KRUMBHOLZ (*Ziegler's Beiträge zur path. Anat.*, Bd. xvi. H. 2) reports an interesting case of intestinal anthrax with choleraic symptoms, in which the autopsy was made half an hour after death. Both small and large intestines showed numerous hemorrhagic swellings with œdema and hemorrhage of the mucosa. There were ascites and swelling of the spleen and mesenteric and retroperitoneal glands. Bacilli were found in the peritoneal exudate and the blood, which proved on culture to be anthrax bacilli. Microscopic examination showed that the bacilli had entered the lymphatics and increased there, the blood containing relatively few.

SURGERY.

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ASSISTANT INSTRUCTOR IN CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA.

CONCERNING SUBPHRENIC ABSCESSES.

LAMPE contributes the following to the *Münchener medicinische Wochenschrift*, 1895, No. 20: Regarding the etiology of subphrenic abscess, the author adopts Maydl's classification, which distinguishes twelve groups, although the cases reported illustrated but five of them. The origin of the largest number of cases is from the stomach. The subphrenic abscesses of this group form in the greater number of cases in consequence of a perforation of a gastric ulcer; but few result from carcinomata of the stomach. The third and fourth decennium furnish the majority of cases. The seat of the abscess dependent upon gastric ulcer will usually be the left subphrenic space; those following carcinoma will usually be on the right side, because the pylorus is most frequently the seat of this form of neoplasm. The mortality of this group is enormously large. In the cases collected by Maydl of thirty-five, twenty-five were not interfered with, and all died. Of ten operated upon, only three were cured.

The case of a patient, twenty-six years old, was then described. He became sick four weeks before with pains in the epigastrium and frequent vomiting; no blood was observed; the pains were always increased by taking food. Ten days past sticking (lancing) pains on the left side were felt on inspiration, and for the past four days there had been severe pain over the entire abdomen. Motion in the left half of the thorax was clearly restrained, pulse small and frequent, abdomen distended, very tender to touch; resonance was impaired over the whole left half of the thorax. The heart had been displaced toward the right. Exploratory puncture of the left side of the chest, in the sixth intercostal space, showed a serous exudation. In the eighth space pus was obtained. Chloroform-narcosis, resection of the ninth rib, evacuation of a large abscess; the upper wall of the cavity was formed by the diaphragm. The patient died on the day of operation. At the section a large left-sided subphrenic abscess was found, the walls of which were the diaphragm, spleen, stomach, and left lobe of the liver; the two latter were glued together to the abdominal wall. On the posterior wall of the stomach, near the lesser curvature, was a perforation allowing the little finger to pass. There were diffuse peritonitis and serous exudation in the left pleural cavity. The seat of the ulcer in this case corresponded to the common location of those giving rise to subphrenic abscess, although ulcers of the greater curvature may result in the same condition, as is proven by Maydl's cases; but, as a rule, these abscesses do not come in contact with the diaphragm.

In subphrenic abscess from perityphlitis, and especially from perforation of the vermiform appendix, the pus either creeps along behind the mesocæcum in the cellular tissue, which is continuous with the perinephritic and subphrenic cellular tissue, as has been shown by the injection-experiments of Koenig and Sänger; or the veins of the appendix and cæcum, becoming the seat of purulent inflammation, establish a pylephlebitis, with abscess of the liver, as pointed out by Bierhoff.

The following case is mentioned: A man, aged thirty-eight years, suffered for years with chronic obstipation. He was taken suddenly with severe abdominal pains and fever. Some weeks later jaundice appeared, and pains in the region of the liver were complained of. Thrombosis of the right femoral vein appeared. On admission to the hospital, five months after the beginning of the disease, the patient was very thin and weak, skin jaundiced, abdomen moderately distended, and the right leg was very much swollen. From the crest of the ilium to the liver a resistant mass was noted, which was dull on percussion. The lower border of the liver reached below the costal margin about three fingers' breadth. The pleural cavities were free. Death ten hours after admission. At the section there was found an abscess adherent to the cæcum. The appendix was behind the cæcum in the abscess-cavity, and the end was gangrenous. The abscess was retrocæcal and extended up behind the kidney and liver and filled the right subphrenic space.

A case is also described showing the development of this kind of an abscess through the portal circulation. At the *sectio mortis* there was an appendix-abscess. The veins of the mesentery were filled with thrombi; the liver contained numerous abscesses.

Subphrenic abscess from subcutaneous trauma is apt to follow insignificant injuries. According to Maydl, there is as a result of the trauma an effusion of fluid, which becomes infected. A case is described in which such an abscess followed the lifting of a heavy weight. A sharp pain was felt at once; later, fever, cough, and expectoration appeared, and there was dulness of the left lower segment of the thorax.

The next group described includes those which originate in infection of the Fallopian tubes in women, especially when following childbirth. In these cases abscess of the liver is always an intermediate stage between the pelvic disease and the subphrenic abscess. A case is given illustrating this variety of the affection.

In the cases described gas-formation in the abscess had not taken place, so that the valuable diagnostic sign of the gas mentioned by Leyden in cases of subphrenic pyopneumothorax was not present. In three cases there was serous pleurisy, and in one case empyema, which, through perforation of the diaphragm, had caused the subphrenic abscess. The presence of the serous pleurisy is of advantage from a diagnostic standpoint. If by exploratory puncture in a higher intercostal space clear fluid is withdrawn, and if pus is found at a puncture lower down, it is reasonable to infer that there are two collections of fluid, separated by a diaphragm. This may, however, lead to an error, because in a purulent fluid the pus-corpuscles may settle, or there may be a serous collection around an encapsulated empyema. There is, therefore, no absolutely sure sign of subphrenic abscess. The only rational treatment is operation as soon as the diagnosis is made.

ON THE LOCALIZATION OF GALL-STONES AND THE SEVERAL OPERATIONS FOR THEIR REMOVAL FROM THE BILIARY PASSAGES.

LLOYD contributed an interesting article on this subject to the *Birmingham Medical Review*, vol. xxxvii., No. 200. It is pointed out that the general diagnosis of gall-stones is insufficient to indicate the appropriate treatment in any given case, and the object of the present paper is to direct attention to the importance of determining in what anatomical region the stones probably lie. Gall-stones may prove fatal from any one of the following causes: Exhaustion, cholæmia, collapse during an attack of colic, peritonitis, pylephlebitis, hepatic abscess, intestinal obstruction, and cancer. The author thinks cholelithiasis is one of the most frequently overlooked of all disorders. Biliary colic is apt to be mistaken for biliousness, wind, cramp, spasm, congestion of the liver, indigestion, cardialgia, lead-colic, renal colic, fecal impaction, pleurodynia, neuralgia, and, when severe, for pleurisy, perihepatitis, peritonitis, appendicitis, intermittent fever, and intestinal obstruction.

The general symptoms of gall-stones include paroxysmal, irregular *pains* in the abdomen, starting either in the right hypochondriac or epigastric region and radiating upward to the shoulder-tip or back to the scapular region. There may be nausea and vomiting. *Jaundice* is not an essential symptom, and may or may not be present. The same may be said of the presence of a tumor. *Pyrexia* is met with if an inflammatory process be present, and if intermittent is a symptom of the greatest value in locating the seat of the concretion. *Localized tenderness* is a valuable sign, and should be carefully studied. *Stabbing-pain* elicited by sharp, deep, heavy percussion over the right hypochondrium is suggestive of calculus. In order to locate the gall-stones the cases are divided into two groups: those in which the walls of the gall-bladder are yielding and allow of its distention, and those in which the walls are contracted, indurated, and indistensible. In the first group the stones may lie (1) in the gall-bladder, (2) in the cystic duct, or (3) in the common duct; and in the second group (4) the stone lies in the shrunken gall-bladder or cystic duct, (5) in the common duct, which with the hepatic duct is thickened and dilated, whilst the gall-bladder and its duct are shrunken and indurated, and (6) the shrunken gall-bladder is packed with stones, and a calculus is present also in the common duct.

In the first condition there may be no symptoms except attacks of colic. If, however, a stone passes along the bile-ducts to the duodenum there may be a mild jaundice on the following day, and the gall-bladder may become moderately distended. In 2 there are a distended gall-bladder and attacks of colic. There is no jaundice. In 3 there are tumor, colic, jaundice, and sometimes pyrexia. This condition must be distinguished from malignant disease of the liver or pancreas, which causes chronic jaundice and distention of the gall-bladder, but is unattended with fever. The fourth condition may be suspected in cases with frequently recurring paroxysms of pain with pyrexia and local tenderness. The recognition of No. 5, one of the most interesting and important, has been made possible by the observations of Osler, who describes the following three symptoms: Paroxysmal hepatic colic, well-marked ague-like attacks, characterized by chill, sweating, and fever, and chronic jaundice of varying intensity, deepening after each paroxysm and fading in the intervals. No. 6 has symptoms like No. 5, and can be recognized only at the time of operation.

The operations which the author prefers in the different conditions are the following: 1. Cholecystotomy. 2. Cholecystotomy, supplemented, if necessary, by cholelithotrity or choledochotomy. 3. The same as No. 2, although cholecystotomy is less apt to succeed here. 4. Choledochotomy or cholecystotomy, without suture. 5 and 6. Choledochotomy or cholelithotrity, preference being given to the former. In 6 separate incisions would have to be made in the gall-bladder and the common duct.

THE RESULTS OF DOUBLE CASTRATION IN HYPERTROPHY OF THE PROSTATE.

DR. J. WILLIAM WHITE has collected the evidence which is now before the profession relative to the operation which he proposed at the meeting of the American Surgical Association, June 1, 1893, in a paper with the above title, read before the same Society, May 28, 1895, and before the American Genito-urinary Association, May 29, 1895 (*Annals of Surgery*, 1895, vol. xxii. No. 1).

The large number of cases already subjected to this operation, and the discussions that have appeared in the medical journals, render at this time at least provisional conclusions justifiable. The present *résumé* is especially interesting, as it presents for the first time a collection of cases and conclusions drawn from them.

The paper is divided into three portions: a theoretical, a clinical, and an experimental.

In the first part the author advances a theory in explanation of the etiology of hypertrophy of the prostate which he considers reasonable, although it is not at present susceptible of demonstration, but which would account for the beneficial results that follow the operation, as well as some of the clinical features of these growths. Dr. White says: "The close relationship between the testicles and the accessory sexual glands—the prostate, Cowper's glands, and the seminal vesicles—naturally leads to speculation as to a possible connection of the overgrowth with the testicular changes coming on with advancing years. In addition to the function of producing spermatozoa, the testicles determine the development of the attributes of masculinity. When full adult life is reached this controlling influence probably ceases." From this the author concludes that "the disappearance of the necessity for a given product, without the coincident disappearance of the vital energy which was expended in producing it, might conceivably result in hypertrophy of organs intimately associated with those which were the source of supply."

The second part of the paper contains a review of the clinical evidence existing at the time the paper was written. One hundred and eleven cases, reported by sixty observers, are tabulated. Three cases, operated on by as many surgeons in different cities, are described in detail. Each of these was seen by several competent physicians, so that the reports cannot be questioned. These reports show the results of castration in appropriate cases, and also afford conclusive answers to the points that have been in dispute.

Of 102 cases contained in the table in which the condition of the prostate was noted before and after operation, 65, or 63.7 per cent., are reported as showing some distinct decrease in size, while in 24 additional cases, 89 in all (87 per cent.), the improvement in other symptoms renders the conclusion justifiable that the prostate had become smaller. As will be seen by referring to the table, in most instances the shrinking of the prostate was both rapid and very marked, amounting in many cases to its practical disappearance. In two cases, in which autopsies have been made, microscopic examination of the prostate showed unmistakable evidences of atrophy, first of the glandular elements and then of the stroma, identical with the changes Dr. White described in his paper in 1893 as occurring in dogs.

In most of the tabulated cases the usual palliative measures are either stated to have been carried out, or such is implied. In many these have been most intelligently and faithfully persevered in for a long period and until the inability of such measures to afford relief had been demonstrated. That the beneficial results do not depend upon relief of congestion and œdema which follows rest in bed, as has been claimed, is shown by the failure of this very measure in some of the cases here reported, as well as by the evidence of actual atrophy of the prostate, as seen microscopically.

The doubt expressed regarding the disappearance of the hyperplasia and the lack of accuracy in describing the size of the prostate, which the critics of the operation have complained of, have been robbed of their force, now that so many careful observers have placed themselves on record. It is impossible that all of them could have been mistaken.

In regard to the time of reporting the cases here recorded, over 71 per cent. were observed more than three months after the operation; in these "the local changes seem to have reached their culmination, and the health of the patients appeared to be permanently re-established."

The author believes that castration is to be preferred to suprapubic prostatectomy, which has been the operation of choice in advanced cases of prostatic hypertrophy for the following reasons: it has a lower mortality, the return to local and general health has been more complete and vastly more rapid than after prostatectomy, vesical contractility has been re-established, and pain and cystitis have disappeared, and the annoyance of a permanent fistula is avoided.

A number of observations, clinical and experimental, are recorded on *unilateral castration*, *ligation and section of the vas*, and *ligation of the vascular structures of the cord.* An effort was made to determine the respective merits of each, and their value, compared with castration, but the material was too limited to permit of definite conclusions.

The paper concludes with the following summary:

1. The function of the testis, like that of the ovary, is twofold—the reproduction of the species, and the development and preservation of the secondary sexual characteristics of the individual. The need for the exercise of the latter function ceases when full adult life is reached, but it is possible that the activity of the testis and ovary in this respect does not disappear coincidently, and that hypertrophies in closely allied organs, like the prostate and uterus, are the result of this misdirected energy. This hypothesis would increase the analogy between the fibromyomata of the uterus and the adenofibromata of the prostate, which, from a clinical standpoint, is already very striking, and is further strengthened by the almost identical results of castration in the two conditions.

2. The theoretical objections which have been urged against the operation of double castration have been fully negatived by clinical experience, which shows that in a very large proportion of cases (thus far in approximately 87.2 per cent.), rapid atrophy of the prostatic enlargement follows the operation; and that disappearance or great lessening in degree of long-standing cystitis (52 per cent.); more or less return of vesical contractility (66 per cent.); amelioration of the most troublesome symptoms (83 per cent.); and a return to local conditions not very far removed from normal (46.4 per cent.), may be expected in a considerable number of cases.

3. The deaths have been 20 in 111 cases, a percentage of 18. But of these there seem to be 13 that may fairly be excluded in an attempt to ascertain the legitimate mortality in patients operated upon under surgically favorable conditions—*i. e.*, before the actual onset of uræmia, or, better, before the

kidneys have become disorganized by the two factors rarely absent in advanced cases—backward pressure and infection. This would leave a mortality of 7.1 per cent., which will probably be decreased as advancing knowledge permits of a better selection of cases. It is important to note that even in the desperate cases which make up this series of deaths, 15 (75 per cent.) showed improvement of symptoms or shrinkage of the prostate before they died.

4. Comparison with other operative procedures seems to justify the statement that, apart from the sentimental objections of aged persons on the one hand, and the real, entirely natural, and very strong repugnance to the operation felt by younger patients, castration offers a better prospect of permanent return to nearly normal conditions than does any other method of treatment. The relatively greater degree of improvement in successful cases should be considered, as well as the mortality, in comparing the operation with the various forms of prostatotomy and prostatectomy. So, too, should the absence of any risk of permanent fistulæ, peritoneal or supra-pubic, the ease and quickness with which the operation can be performed, and the possibility of avoiding altogether the use of anæsthetics, which, in these cases, are in themselves dangerous.

5. The evidence as to unilateral castration is at present contradictory, but there can be no doubt that in some cases it is followed by unilateral atrophy of the prostate, and in two cases, at least, it has resulted in a very marked improvement of symptoms. It is worthy of further investigation.

6. My experiments on dogs have shown in nearly every case in which the vas deferens was tied or divided on both sides, that, without much change in the testicles, there were beginning atrophy and considerable loss of weight of the prostate. These experiments need repetition and confirmation, as the absence of corresponding testicular change seems to make the results somewhat anomalous. It is possible that the inclusion or severance of small but important nerves may account for the effect on the prostate.

7. Ligation of the vascular constituents of the cord, or of the whole cord, produces atrophy of the prostate, but in my experiments only after first causing disorganization of the testis.

Two Cases of Appendicitis Associated with Rheumatism.

Brazil (*Brit. Med. Journ.*, May 25, 1895) reports two interesting cases of appendicitis associated with symptoms of rheumatism. In the first patient there were pain and tenderness at and around McBurney's point; he had vomited several times, the temperature was slightly over 102°, and there was double tonsillitis. In the next few days he complained of pain in the right shoulder joint, and profuse perspiration. He was then given 15 grains of salicylate of sodium every four hours. On the following day pain and tenderness had almost disappeared, and by the next day, the seventh from the commencement, he was practically convalescent.

The second case, a girl aged twelve years, had pain in the right iliac fossa, and vomiting, followed by pain in the left shoulder joint and along the spine. She had pain and tenderness at McBurney's point, extending downward toward Poupart's ligament. The temperature was 101.2°, pulse 120, urine loaded with urates. Salicylate of sodium (gr. xv.) with tincture of opium (♏x.) every four hours, reduced the temperature and pulse, and relieved the pain, so that on the following day she was convalescent.

The author makes the following remarks: The occasional association of the symptoms of typhlitis or appendicitis with those of rheumatism appears only to have been noticed quite recently. Haig published the first case in 1893, and others have since been mentioned. Recent researches have shown that cases which used formerly to be termed typhlitis and perityphlitis are almost invariably appendicitis in reality, and we shall probably not greatly err in regarding all the cases here alluded to as belonging to that category. Whether the symptoms of appendicitis were really of rheumatic origin or not is a question on which we cannot dogmatize as yet. The author ventures, however, to think, that there is already some clinical evidence pointing to that conclusion, and the remarkable similarity of structure between the vermiform appendix and the tonsil, together with the well-known liability of the latter organ to rheumatic inflammation, would lend support to the view.

Case of a Tumor of the Dura Mater Pressing on the Brain Successfully Removed by Operation.

Syme (*Australian Med. Journ.*, February 20, 1895) reported the following interesting case to the Medical Society of Victoria.

A male patient, thirty years of age, awoke two hours after retiring with a peculiar sense of constriction about the throat, a numb feeling in his tongue and the right side of his face, and with a general feeling of oppression below his left ribs. It was observed that the right side of his face twitched, his right arm and leg were drawn up, and then spasmodically jerked, and then his whole body convulsed. The attack lasted about twenty minutes. The next day he felt confused and had some difficulty in speaking distinctly, his tongue felt awkward, and his face was drawn to the left side. On examination he had distinct and complete paralysis of the right side of the face and tongue. His speech was a little thick. There was no loss of sensation in face or limbs, and no paralysis of any other part of the body. His hearing was perfect, and he could write.

From the distinctness of the limitation of the premonitory symptoms to the face, tongue, and throat, the commencement of the spasms in the face and tongue, and the persistence of the paralysis afterward in these parts, it was concluded that he had some irritation of the cerebral cortex over the face and tongue centres in the lower part of the left ascending frontal convolutions, and that the irritation was probably due to a tumor.

About a month later he had another fit, and he continued to have attacks of epileptic convulsions at intervals varying from five to three weeks, exactly the same as the first, except that he did not always lose consciousness. His tongue was always bitten. He never passed urine or feces in the attacks. The facial paralysis lasted for several days after the fit, and gradually improved till the next attack.

When next seen, eighteen months later, he was then completely aphasic, and was also unable to write; he was able to write the letters, but could not put them together to form intelligible words. There was, in addition to his previous symptoms, distinct paresis of the right hand, and he complained of pain in the left parietal region, which he said had been present for some months. The fits had increased in frequency and severity, and had latterly been always followed by loss of speech, which gradually passed off.

On removing a disk of bone over the centre for the face and tongue, a tumor was discovered bulging out the dura mater. The bone wound was increased as the tumor was found to extend further forward and upward toward the second frontal convolution. The tumor was found to be adherent to the dura mater, part of which had to be removed, and from which it appeared to have grown. It was encapsulated and was quite easily separable and distinct from the brain substance, and left a cavity corresponding to the lower part of the ascending frontal and posterior part of the second and third frontal convolutions. The tumor weighed two and one-half ounces. Hemorrhage was free during the whole period of operation. The cavity was well washed out with hot sublimate lotion (1 : 2000), and packed with iodoform-gauze, and the major part of the wound closed by suturing with horse-hair, a small part being left open for drainage. The dura mater was not sutured or the bone replaced; an antiseptic dressing was applied.

The temperature never rose above 100.6° F., and kept for the most part about the normal line. The day following operation the iodoform-gauze was removed, as there had been but little oozing. The wound was dressed daily for the next three days, when the brain commenced to protrude slightly through the unsutured part. A pad of sublimate-gauze was placed over the protruding tissue, and two days later the unsutured parts were brought together and sutured. Pressure was again applied, and no further hernia occurred.

The recovery was rapid from the operation, but slow from the paralyses. He was discharged five weeks after operation. There was a depression in the region of the scar. Four months after operation the paresis of face and tongue is very slight. His speech is good. He writes well. He has no pain, has had no fits, and feels able to resume work. The tumor was a round-celled sarcoma arising from the connective tissue of the dura mater.

THE EDUCATION OF THE VICARIOUS FUNCTIONS IN THOSE IN WHOM AMPUTATION HAS BEEN PERFORMED AND IN THE PARALYTIC.

GLUCK (*La Méd. Mod.*, May 15, 1895) calls attention to the necessity of teaching those who have suffered amputation of a limb the use of the artificial member which has replaced it. He presented a number of patients before the Medical Society of Berlin in illustration of the methods he employed. In the first case the patient was twenty years of age, and had had a paralysis since infancy of all four limbs, with contraction of the flexors of the elbow and wrist, and of the knee and hip of left side. The patient could not move without great effort, and the muscles were greatly hypertrophied. The contractions were overcome by sectioning of the *fascia lata*, and all the soft parts about the elbow-joint and hand. The muscles of both the right hand and right thigh recovered their power through appropriate exercise. The result was very good. The patient walked very well with the use of an apparatus, and could use the muscles of the right hand sufficiently to earn her living by writing.

In the second case, a child who had lost the left leg danced and jumped on the right.

In the third case, an infantile paralysis of the lower extremities in a boy, the patient had no use of the lower limbs, but could walk and jump on his hands.

TUBERCULOSIS OF THE MAMMÆ.

RECNICK (*Beiträge zur klin. Chir.*, Bd. xiii. Heft 1) believes that the diagnosis of this disease can only be based upon the histological examination and the observation of the very few tuberculous bacilli that are present. There are three modes possible through which infection may come: (1) Direct infection from without, which is improbable in most cases; (2) extension by contiguity, probably the most common method, although the cases which are under consideration do not probably belong to this form.

(3) Primary tuberculosis of the mammæ, the author believes, in which infection of the neighboring tissues is excluded, can only occur in the third mode, the hæmatogenic.

As to treatment the author recommends in circumscribed disease, where the diagnosis has been established, an attempt at partial extirpation; in more advanced cases total extirpation and removal of the axillary glands.

OTOLOGY.

UNDER THE CHARGE OF

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ECZEMA OF THE EXTERNAL AUDITORY CANAL.

HERMET (*Journal de Médecine de Paris*, January 27, 1895) presents the causes and symptoms of this disease very graphically. But the treatment of acute eczema of the auditory canal with strong solutions of nitrate of silver we have found valueless. In fact, nothing equals in efficiency in this malady black wash, *ad libitum*, by instillation, in the burning, painful stage of acute eczema of the auditory canal.

THE EAR IN TABES.

Those affected with bulbar tabes may exhibit cutaneous ulcerations of the face, nose, and auricles, the symmetrical distribution of which demonstrates its trophic origin. The lesion of the middle ear in tabes is sclerosis of the inner wall of the drum-cavity and the inner surface of the membrana tympani. This may arise from the changes in the trophic nerve of the cavity, coming from the fifth nerve, which is affected centrally. The sensory and trophic changes in the skin of the auricle and face in tabetics mentioned above lend support to this hypothesis. This sclerosis, as well as the lesion of the fifth nerve and the tabes itself, may all be parasyphilitic results.—F. J. COLLET: *La Presse Médicale*, January 12, 1895.

THE BAD RESULTS OF PIERCING THE LOBULE OF THE AURICLE.

FOURNIER reports, among other infections of the lobules of the ear from jewellers piercing it for ear-rings, several cases of lupus, syphilis, and tubercle.—*Journal de Maladies cutan. et syphilitiques*, vol. vi., p. 321.

INCIPIENT INFLAMMATIONS OF THE EAR IN EARLY LIFE AND THEIR SEQUELÆ.

The probability that a physiological condition of the newborn child's ear will pass into a pathological state seems to be exaggerated by some writers (S. MACCUEN SMITH, M.D., *New York Medical Journal*, vol. lx.). If the ear of a newborn child is *let alone*, no inflammation will occur in it from retained natural secretions, as the ear possesses the power to relieve itself of them by the outward growth of the skin lining the auditory canal.

The newborn child is often the victim of too much washing and swabbing of the meatus on the part of oversensitive mothers and oversedulous nurses. It is not uncommon to find infants a few weeks old suffering from a discharge from both ears thus set up. But the true cause of the disease is generally denied by the nurses, though sometimes admitted by the mothers.

TRAUMATIC MYRINGITIS.

The evils of ignorant and unskilful manipulations of the external auditory canal and membrana are shown in a case applying for relief from ear pain at Prof. Seiss's clinic in the Philadelphia Polyclinic. A general practitioner had roughly probed a perfectly well ear for reasons unknown, with the result of wounding the fundus of the canal and setting up a profound dermatitis at this point.—W. HENRY FRITTS, M.D.: *Philadelphia Polyclinic*, January 19, 1895.

TRAUMATIC RUPTURE OF THE MEMBRANA TYMPANI.

Attention is again called to the fact that the membrana tympani is often injured, in cases of fracture of the skull involving the petrous portion of the temporal bone, by blows on the chin and by a "box on the ear." Such accidents may or may not be accompanied by hemorrhage from the auditory meatus. Of course it follows from the nature of some of the injuries named above that hemorrhage from the meatus auditorius is not necessarily a grave symptom.—J. LINN THOMAS, F.R.C.S., Eng.: *British Medical Journal*, November 3, 1894.

FOREIGN BODIES IN THE EAR.

In regard to foreign bodies in the ear much might be said if space permitted. The first and important injunction is: be sure there is a foreign body in the ear before endeavors are made to extract it. Much damage has been done to the ear by the general practitioner groping after a foreign substance said to be in the ear, which was not there and never had been. In no case should anyone not a specialist use any form of surgical instrument to extract a foreign body from the ear. If a living insect has entered the ear a few drops of sweet-oil will smother it, and it may then be syringed out with warm water. If an inanimate substance has been placed in the ear, as is often done in play by children to their own ears, syringing with warm water will generally remove it, if the ear has not been previously wounded by probes or forceps. If the latter has been done the child should be etherized and the foreign body removed by an expert. There is no hurry demanded in such cases. The foreign substance had better be left in the ear indefinitely than to apply rough measures for its removal. What a child can slip into the ear in play can be easily removed if the physician first called knows how to do it. Unless he knows what to do and what not to do, he had better not touch the case. It will be better to send the patient to the nearest aurist than to do the wrong thing for relief. Death has occurred by the unskilful endeavors of the general practitioner to remove a foreign body from the ear of a child. Not the foreign body in the ear, but the improper treatment is the cause of death in such cases.—ROBERT BARCLAY, M.D.: *Polyclinic*, Philadelphia, October 13, 1894. We consider the instillation of oil into the ear, for the removal of foreign matters from it, as recommended by Ziem, of Dantzic, as futile.

BACTERIOLOGICAL INVESTIGATION OF THE SUPPURATIVE EAR DISCHARGES OCCURRING IN SCARLET FEVER.

FRANK R. BLAXALL, M.D. Lond., has made an exhaustive study of the above-named subject, and his conclusions, similar to those of Gradenigo and Pes (see this JOURNAL for July, 1895, p. 104), are as follows: 1. That the organism most potent in the etiology of the otitis media of scarlatina is the streptococcus pyogenes. 2. The less chance there is of *contamination from the outer air, through the external ear*, the more the pyogenic cocci predominate over the rod-forms, but that prior to perforation of the membrana tympani the occurrence of such organism is not precluded, since they may ascend from the mouth and air-passages. 3. Next to the streptococcus the most important organisms are the staphylococci albus and aureus. 4. Apparently the diplococcus pneumoniæ of Fraenkel or the bacillus pneumoniæ of Friedländer do not play such an important part in otitis media of scarlet fever as in the otitis media acuta due to other causes.—*British Medical Journal*, July 21, 1894.

THE CARE OF THE EAR DURING THE EXANTHEMATA.

MR. WALKER DOWNIE, of Glasgow, in an article on this subject (*British Medical Journal*, November 24, 1894), first showed that tympanic involvement was due in 26.1 per cent. of cases to measles, in 12.6 per cent. to scarlet fever, in 29.4 per cent. to a catarrhal origin, and in 20 per cent. to the eruption of teeth (in children under twelve years of age). The otitis media in them is due, not so much to direct extension of inflammation from throat and nose, by the Eustachian tube, to the middle ear, as by the sealing or plugging of the mouth of the Eustachian tube by the retained mucus in the naso-pharynx, the damming then of mucus in the ear, with consequent distention, extravasation, and pain in the ear, all favored by the recumbent position. Therefore the treatment should consist, first, in vigorous blowing and cleansing of the nose, if possible, and gentle Politzer inflation, *chiefly for dislodging mucus plugs from the naso-pharynx*, and, if these methods give no relief to pain and deafness, to paracentesis of the membrana. Blisters, leeching, application of Leiter's coil, and the like to relieve earache, he regarded (very justly) as an "evidence of ignorance of the conditions under consideration," and as loss of valuable time.

Dr. Wendell C. Phillips, of New York, writes in the same way of the ear in the course of the exanthemata, recommending great caution in the use of any form of inflation of the tympana in such cases, lest septic matter be forced into the middle ear.—*American Medical and Surgical Bulletin*, New York, March 15, 1895.

We regret to be obliged to condemn the method of evacuation of the tympanum by alternate condensation and rarefaction of the nares and naso-pharynx, by means of a bulb-syringe, recommended by Mr. Donald B. Fraser, of London, Ontario.—*Medical News*, Philadelphia, April 27 and May 18, 1895. Such a method of treatment of inflamed nares and naso-pharynx would surely force septic matter into both tympana and dry-cup these naso-pharyngo-Eustachian regions, resulting in extravasation and rupture in the delicate mucous lining of these structures.

The "stopped-up" feeling in the ear, in the early stages of a coryza, is shown by Dr. B. Alexander Randall to be due, not to secretions in the tympanum, but to a vacuum in the drum-cavity by the unconscious performance by the patient of the "negative" Valsavan or Toynbee exhaustion of the air in this cavity. He shows that cocaine, though relieving the condition at first, is followed by obstinate secondary relaxation, requiring gentle alkaline spraying, followed by an oily spray, like glycoline or fluid petrolatum, in which menthol and camphor, of each one grain, are dissolved, and then, according to his experience, light insufflations or dusting of the affected parts with calomel. But no inflations of the naso-pharynx and middle ears are recommended in this condition by this sagacious writer. —*Polyclinic*, Philadelphia, May 4, 1895.

AURAL INHIBITIONS.

GELLÉ maintains that aural inhibitions are frequent and easily produced in neurasthenics and hystericals, and such subjects he terms "inhibitropes." —*Annales des Maladies de l'Oreille*, vol. xx.

Audition may be inhibited by concentrated attention, preoccupation, and functional activity of other viscera, as during digestion and pregnancy. Clinical observation shows also that the hearing is altered in ulceration of the larynx and of the isthmus of the pharynx (which latter also causes earache), and in dental caries, etc.

Inhibitions originating in aural irritation are frequent and intense. Thus a foreign body, as a cerumen-plug, and the introduction of the ear-funnel may cause sudden aphonia, spasmodic cough, and difficult deglutition.

Everything causing compression of the labyrinth or any abnormal tension of the auditory apparatus predisposes to central incapacity and dulled intelligence. Acute and chronic otitis are often attended with defective vision. Vasomotor activity is influenced markedly by affections of the labyrinth, pressure on the stapes causing injection of the conjunctiva. In sclerotic otitis, disturbances in the capillary circulation of auricle and face are sometimes very marked. In a case of multiple recrudescent polypi in the ear, after extraction, Gellé observed a double exophthalmos develop without alteration in the pulse or thyroid body. Dryness of the fauces and of the skin of the auditory canal has long been noted as secretory inhibitions in sclerotic otitis media. Affections in the mucous membrane of the Eustachian tube cause paresis of the adjacent palatine muscles and consequent autophony and aphonia. Otitis may affect the chorda tympani, resulting in dryness of the corresponding side of the tongue and in impaired taste. Paresis of the sterno-cleido-mastoid and torticollis may appear on the side of the diseased ear.

Most remarkable of all is the inhibition of one ear by the other. Thus a concussion of the labyrinth on one side may be followed by great impairment on the uninjured side by inhibitory action of the affected ear.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

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BLINDNESS AFTER HEAD INJURIES.

E. NETTLESHIP, of London (*Ophthalmic Review*, vol. xiv., No. 162), reports three cases of amaurosis after injury to the head. In the first there was a fracture of the base in early childhood, followed by total loss of sight in both eyes, coming on two hours after the accident. For about a fortnight blindness remained complete, then there was gradual recovery until six weeks from the accident. Vision was 6/24 and 6/6. In the second case, of a woman aged fifty years, vision failed about two days after the injury, until unable to count fingers with the right eye. There was hemorrhage from the nose at six days after injury. After twelve days vision improved rapidly, and became "very good" within four weeks. In the third case, of a man aged thirty years, the blindness of the left eye was absolute, and the disk became pale, with slight haziness of the retina and cherry-red spot at the macula.

In these cases the blindness is almost always permanent, and the disk comes to show atrophic changes. In the rare cases, where recovery of sight takes place, it seems most probable that the damage has been due to effusion of blood into the sheath space of the optic nerve rather than to injury of the nerve itself. That such distention may occur has been shown by a case reported by Priestley Smith. Nettleship suggests that the appearances in the third case, like those seen in embolism, might be explained by persistent compression of the nerve and the central vessels by a large clot in the sheath.

The Best Method of Treating Hernia of the Iris.

Grandclément, of Lyons (*La Médicine Moderne*, 6 ann., No. 38) finds that any hernia of the iris left to itself constitutes a permanent menace to the eye and vision either by staphyloma or infection. It should be met by surgical intervention. Reduction, either spontaneous or by the use of eserine or atropine, is exceptional and rare. Of the three operative methods he finds excision offers risk and difficulty; cauterization is painful and often inefficient; but incision, properly done, gives certain and rapid results. The incision should boldly divide the hernial protrusion into equal parts in the direction of its greatest diameter.

Iridectomy for Glaucoma.

A. M. Ramsay (*Glasgow Med. Journ.*, vol. xliii., No. 4) finds myotics and systemic remedies are merely tentative, and the long natural history of a case of chronic glaucoma prevents one from estimating how much they really prolong the course of the disease. No case was ever cured by their means alone. The only cure is an iridectomy performed at the proper time and satisfying the following requirements:

(1) The incision ought to be large and wholly in the sclera, about 1 mm. behind the corneal margin. The knife may be either a keratome or a linear section knife. A keen edge is more important than the shape.

(2) The aqueous ought to be allowed to drain off slowly.

(3) The loop of iris to be excised should be carefully pulled out of the wound, snipped on one side, then torn away from its ciliary attachment along the whole length of the wound, and afterward cut off by another snip. If a corneal incision be made, and the iris drawn out and cut off by one snip of the scissors, more harm may be done than good. The iris bleeds freely, and is always very sensitive, so that if chloroform has not been administered, this stage of the operation is very painful.

(4) The corners of the cut iris must be very carefully replaced, in order that, if possible, no tags may become adherent to the wound.

The operation ought to be performed as soon as possible after the diagnosis of glaucoma is clearly established, and, although this remark applies principally to the inflammatory forms of the disease, it also holds true of the simple non-inflammatory.

Amblyopia from the Use of Acetanilid.

R. Hilbert, of Sensburg, reports (*Memorabilien*, xxxix. Jahrg., 2 Heft.) a case of severe temporary blindness from the use of this drug. The patient, a well-built man of thirty-six years, after a night of dissipation, awoke late in the morning with a severe headache, for which he took one gramme of "antifebrin." This dose not having the desired effect, he took within a half hour two more grammes, when suddenly with the relief of the headache alarming symptoms developed. There were vertigo, a disagreeable rushing noise in the ears, the subjective olfactory disturbances of this drug, and vision in both eyes sank rapidly to a minimum, so that he could not find his way about his room.

When seen, about noon, his face was noticeably pale, the forehead covered with cold sweat. The pupils were of medium size and did not react to light. He could barely recognize the movements of the hand at one-half metre, and this only near the centre of the visual field. With the ophthalmoscope the optic disk appeared pale, the retinal vessels diminished. The pulse was 64 to the minute, the heart sounds clear, the urine free from albumin and sugar.

He was given brandy internally and inhalations of amyl nitrite. Five minutes after the first inhalation there was improvement of vision with the reddening of the face and quickening of the pulse. The inhalations were continued for two hours, and an injection of strychnine given. By 8 P. M. vision had risen to 6/12, and there was no apparent limitation of the visual field. At one o'clock the next afternoon vision was normal in both eyes, the pupils were of the usual size, with prompt light reaction, and there remained no pathological appearance in the fundus.

Hilbert points out that amblyopia from acetanilid, like other toxic amblyopias, appears to depend on anæmia of the retina, and perhaps of the visual centres.

CARCINOMA OF THE CONJUNCTIVAL LIMBUS IN A CHILD.

ROGMAN (Ghent) reports (*Annal. d'Oculist*, vol. cxiii., No. 3) a case occurring in boy of fourteen years, the youngest of five children, all healthy. The tumor was of a yellowish-white color, 3 mm. wide, 4 mm. long, its greatest diameter being parallel to the limbus, and 1 or 2 mm. thick. Its surface was slightly nodulated, but not ulcerated. It had been noticed first about a month and a half previously. It was removed with a bistoury and the surface of implantation energetically curretted. More than a year afterward the eye remained normal, except a slight spot of venous tint from thinning of the sclera. The anatomical (microscopical) diagnosis of commencing epithelial carcinoma of the conjunctival limbus was unquestionable.

OUTFLOW CHANNELS OF THE EYE AND ARTIFICIAL GLAUCOMA.

M. KNIES (Freiburg) years ago, by introducing non-irritant substances into the eye-ball, demonstrated the course of the intra-ocular currents and the outflow through Fontana's space. He now reports (*Arch. of Ophthalmol.*, vol. xxiv., No. 2) the results of a series of experiments made to render visible the channels of outflow from the eye (especially those of the anterior chamber) by means of the inflammatory changes which aseptic agents provocative of inflammation, that had been introduced into the vitreous, would excite in the course of their passage through those channels. The substances employed were olive oil and oil of turpentine, to which was added mercurial ointment in a part of the experiments. The results of these experiments showed that the outflow takes place mainly from the angle of the anterior chamber through the sclera to Tenon's capsule, and to a less extent through the unchanged cornea, and when these anterior channels were blocked by the inflammatory changes produced in and about them the existence was demonstrated of posterior channels of outflow with a starting point at the optic papilla, especially in its interstitial tissue.

It was hoped by exciting an adhesive inflammation in the channels of outflow to produce an artificial glaucoma; but this was only partly successful. Only a temporary occlusion with corresponding glaucomatous attack was secured. Permanent occlusion of the channels he failed to produce. But he believes that whoever can discover an inflammatory agent acting continuously but less intensely than the one he employed can do it. He suggests as of this nature the substance secreted by a growing malignant tumor.

He concludes that the theory of the neurotic origin of glaucoma should be done away with. If we call glaucoma simplex what it really is, optic nerve atrophy with excavation, and call the true forms of glaucoma irido-cyclitis anterior (*i. e.*, a form in which the exudate is found mainly on the anterior aspect of these parts), an inflammation which may occur in every possible degree of acuity and intensity, we have the designation in which the clinical symptoms and the anatomical conditions are strictly correlative, we have well-known and readily recognizable clinical pictures of diseases that have a real existence.

DIPHTHERITIC CONJUNCTIVITIS TREATED WITH ANTITOXIN SERUM.

V. MORAX (Paris) reports in the *Annal. d'Oculistique*, vol. cxiii., No. 4, four cases of diphtheritic conjunctivitis treated by injections of the antitoxin. The ages of the patients ranged from ten months to six and a half years. In three there was also nasal diphtheria, and in the oldest largyngeal diphtheria requiring tracheotomy and broncho-pneumonia, yet all recovered. Corneal disturbances occurred in none of the cases. Morax believes, contrary to the common opinion, that this disease is very frequently benign; but the rapidity of the recovery and the changes in the local and general condition following the injection so closely, showed conclusively the therapeutic activity of the serum. In all of these cases the bacteriological examination revealed the presence of the diphtheria bacilli, which disappeared rapidly on recovery.

In the local treatment collyria of silver nitrate were used apparently with beneficial, and certainly without harmful, effect. The use of this caustic is advised after the injection of the serum in doubtful cases where both purulent secretion and false membranes are present.

LARGE PROBES IN THE TREATMENT OF LACHRYMAL OBSTRUCTION.

S. SNELL (of Sheffield) reports in the *Ophthalmic Review*, vol. xiv., No. 162, his experience with the use of large probes as advocated by Theobald. He employs probes ranging in size from 1.25 to 4 mm., not numbered after the usual plan, but with the size in millimetres stamped upon them. After slitting the canaliculus he does not, as a rule, begin with the smallest probe. If the 1.5 mm. will pass it is succeeded by the 2 mm. and 2.5 mm., or it may be by the 3 mm. The next day the largest probe previously passed is again used, followed by the next size. The patient is not seen again for two days, then for three or four days, then for a week, until four or five weeks elapse. If the case is satisfactory attendance will then cease. It is rarely necessary to use the 4 mm. probe, but the 3 mm. is constantly required, and less frequently the 3.5 mm.

Snell finds his experience after sixteen years most satisfactory. The bulk of cases are cured or very much benefited. Those in which improvement does not take place are very few. His success is better than it was when employing smaller probes.

VASCULARIZATION OF THE ANTERIOR SURFACE OF THE LENS.

A. DARIER (Paris) records (*Ann. d' Oculistique*, vol. cxiii., No. 1) the occurrence of this in a case of chronic relapsing iridochoroiditis in a woman aged forty-two years, already past the menopause and without constitutional taint. There were posterior synechiæ and clouding of the vitreous. No lesions had been noticed in the fundus. The iris was infiltrated, thickened, œdematous, and vessels, new formations, and small hemorrhagic spots were seen on its surface. At the lower inner portion of the pupil, extending from the free border of the iris, or rather from its posterior surface, were seen four vascular branches, two arteries and two veins, very distinctly ramifying in a fine network on the anterior surface of the lens. The other eye presented posterior synechiæ, but the vitreous was clear. The inflammation was of almost two years' standing when the vessels were noticed, their appearance suggesting vascularity of the cornea. The case bore no resemblance to cases of persistent pupillary membrane. Iridectomy was done with apparently beneficial effect, and the vessels ceased to carry blood. The tension remained sub-normal.

OBSTETRICS.

UNDER THE CHARGE OF

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ASSISTED BY

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TEMPERATURE, PULSE, AND RESPIRATION DURING LABOR AND THE PUERPERAL STATE.

In the *Transactions of the Obstetrical Society of London*, 1895, vol. xxxvii., No. 1, WILLIAMS and CUTLER report their observations as follows: They consider the low rate of the pulse after delivery to be exaggerated in many text-books. They found that in 11 per cent. the pulse remains stationary, while in 13 it was increased after the end of the third stage. It was found that the length of labor has influence upon the pulse, and also that chloroform made the pulse higher after delivery. In nineteen cases of post-partum bleeding the pulse rose on the average 19 beats per minute; the tension is usually above normal during labor, and, should it be below normal, there is danger of bleeding.

Respiration is slightly slower after delivery. The average temperature during the lying-in state was between 98° and 99° F. Rupture of the perineum did not influence the temperature, unless septic infection occurred.

A SUCCESSFUL SYMPHYSIOTOMY.

ABILIO DI MARCARENHAS, in the *Annales de Gynecologie,* 1895, vol. xliii., p. 488, reports the case of a primipara of the age of twenty-nine years, who was rhachitic, and whose pelvis measured in the external antero-posterior diameter 16 cm. The patient was admitted to the Maternity of Sainte-Barbe at Lisbon, and symphysiotomy was performed. The membranes were retained unbroken until after the pubic-joint had been opened; the child was delivered alive by forceps. The mother's recovery was complicated by slight fever and diarrhœa, which may have been caused by mercurial poisoning, as bichloride was used freely about the patient. Before she left the hospital it was found that symptoms of tubercular infection were present, accompanied by dulness at the right apex. The child survived and left the hospital in good condition.

PREGNANCY COMPLICATED BY SUPPURATION WITHIN THE PELVIS.

MICHIE reports in the *Medical Press and Circular,* 1895, No. 2926, a series of interesting cases in which pus had formed during pregnancy within the pelvis.

The first case was that of a middle-aged, married woman, who was four months pregnant when she developed appendicitis, and was operated upon, a perforated appendix being removed with a concretion lying at the bottom of an abscess within the pelvis; the cavity was drained by an India-rubber tube; the patient recovered in three weeks, and went to term and bore a living child in spontaneous labor.

He also reports the case of a multipara who was seized several times before labor with peritonitis, which was worse after delivery; the abdomen was opened, and several pints of offensive pus were removed; the Fallopian tubes contained pus, and the ovaries were soft, gangrenous, and almost black; the abdomen was flushed with warm water and drained by a glass tube; the patient recovered.

He also describes the case of a primipara six months pregnant, who fell off a chair, causing pain and tenderness in the abdomen; she miscarried six days later and was attacked by peritonitis; abdominal section was performed and several pints of pus evacuated; the abdomen was drained with a glass tube, and the ovaries and tubes allowed to remain; the patient recovered and subsequently became pregnant.

The writer also reports the case of a young woman four months pregnant in whom the uterus was retroverted, while both tubes and ovaries were diseased; they were removed by abdominal section, the patient making a good recovery. He also reports a fatal case in a multipara aged forty years, about five months pregnant; she had been kicked and abused by a drunken husband; on examination, peritonitis was present and pregnancy was observed; at operation the pelvis contained a half-pint of sero-purulent fluid, with double pyosalpinx. The abdomen was flushed with warm water and a rubber drainage-tube inserted; on the third day miscarriage occurred, followed by death on the sixth day from septic peritonitis.

He also reports an interesting case of a multigravida who was three months pregnant. On examination an ovarian cyst was diagnosticated complicating the pregnancy; labor pains came on, with fever and high pulse; delivery was impossible, as the pelvis was blocked by the tumor; accordingly, the abdomen was opened, and an adherent ovarian cyst containing fetid pus was removed from the right side. No drainage was employed. Shortly after the operation the patient's abdomen became distended, and it was necessary to insert a glass drainage-tube; improvement followed and the tube was removed, but had to be reinserted; the patient made a good recovery. She afterward presented herself for treatment, suffering from retroversion of the uterus; there was also found an enlarged and cystic ovary, which was removed by abdominal section. Upon reopening the abdomen, the adhesions which had been found at the first operation had entirely disappeared.

PUERPERAL TETANUS; RECOVERY.

THOMAS reports, in the *New Orleans Medical and Surgical Journal*, June, 1895, the case of a primipara who was delivered in spontaneous labor of a healthy male child; the patient was given quinine freely, as is often done in malarious districts; on the sixteenth day after confinement the patient was seized with pain in the region of the neck and jaws; tetanus soon developed, her paroxysms became severe, and opisthotonus was present. The patient was treated by laxatives, liquid feeding, and the free use of hydrate of chloral and bromide of potassium; although she was severely ill for three weeks she finally recovered.

CONGENITAL ICHTHYOSIS.

An especially good account of this rare disease, with microscopic section of the skin, has recently appeared in Ballantyne's *Diseases and Deformities of the Fœtus*, Vol. II., 1895. The reported cases of this disease are fully reviewed and illustrated, and a good bibliography is appended.

In the *New York Medical Record*, July 6, 1895, **CABOT** reports the case of an infant, fourteen months old, brought to the Vanderbilt Clinic suffering from congenital ichthyosis. The mother was a healthy German woman who had borne healthy children previously. This child was born at seven months, the mother being four days in labor, with gushes of a watery fluid accompanied by uterine pain every half hour, with dribbling between the pains; about two gallons of fluid escaped when the membranes ruptured; upon birth the child presented a ghastly appearance, being perfectly dry, its nostrils closed, while the mouth and eyes were opened, and apparently fastened in this position; it was necessary for the attending physician to make an incision into each nostril through which the child might breathe. The child was nursed but a short time, but had such difficulty in sucking that it was fed with a spoon; it survived several attacks of marasmus and shed the entire skin several times; reddened surfaces were left, looking at first like natural skin, but which after a few days became dry and wrinkled, and covered with scaly material. The temperature of the child was also above normal. It was treated by linseed oil internally and externally, and boric acid solution. It finally developed bronchitis and died outside the hospital, from general malnutrition. The case was of unusual interest from the length of time which the child survived its birth. Most of these children live but a few months.

Decapitation and Version in Dorso-posterior Positions.

In the *Centralblatt für Gynäkologie*, No. 20, 1895, Zweifel contributes an interesting paper upon the above subject. From his studies of decapitation as performed by Braun's blunt hook, he believes that the fulcrum for the action of the hook should be in the hand of the operator and not in the neck of the child. To bring this about he has devised a double hook which is inserted under the guidance of the left hand within the vagina. The index and middle fingers are passed behind the child's neck, while the thumb is in front; the other hand is placed upon the abdomen to fix the child's body from without, or make gentle traction upon the prolapsed arm for the same purpose. The operation is best performed under anæsthesia. The instrument is then applied, being closed when introduced and passed between the symphysis and the neck of the child, and then so turned that the point of the two hooks shall grasp the neck from above. If traction be made upon the hook and if the two handles are partially rotated, the luxation of the vertebræ at once occurs. The hooks are again brought together, and under the guidance of the fingers of the left hand the soft parts are severed in the same way. If a portion of the soft parts remain after the operation is completed, it may be necessary to insert the hooks again to sever these tissues. The body of the child is then extracted, while the head is usually removed by making traction with the index finger placed in the mouth. In cases of contracted pelves it is sometimes necessary to deliver the child by the cephalotribe.

Zweifel reports four cases in which decapitation was performed with his instrument; one of these was operated upon by an assistant, and died of hemorrhage caused by a laceration of the cervix. The operator had not carefully mapped out the neck of the child with his fingers before applying the hooks, nor had he seen that the points of the hooks were not directly against the wall of the uterus.

He also reports a fifth case of dorso-posterior position in which version could not be made and in which labor was terminated by decapitation. A case reported in 1892 by Sänger is described in which the child lay with its back posterior and in which traction was made upon the upper foot, the arm having prolapsed; the result was impaction of the fœtus and rupture of the uterus.

In making version in these cases of dorso-posterior positions Zweifel urges, if an arm is prolapsed, that the physician should not pull upon the upper foot of the child. If the arms have not prolapsed it makes but little difference which foot be grasped. In either event traction should be made downward and backward toward the sacrum and not toward the pubic joint. If these precautions be observed Zweifel has been successful in the majority of cases of version in dorso-posterior positions.

CÆSAREAN SECTION FOR LABOR IN KYPHOTIC PELVIS, WITH EXOSTOSIS.

LUDWIG (*Centralblatt für Gynäkologie*, No. 20, 1895) reports the case of a patient, twenty-eight years old, who presented herself at the clinic in labor and with a kyphotic pelvis; upon internal examination it was found that a firm, hard tumor projected over the posterior surface of the symphysis; as labor was clearly impossible Cæsarean section was performed as soon as labor began. Mother and child made a good recovery.

ON THE MANAGEMENT OF THE PREGNANT, PARTURIENT, AND LYING-IN WOMAN SUFFERING FROM CARDIAC DISEASE.

PHILLIPS, in the *Practitioner*, June, 1895, does not believe that during pregnancy the left ventricle is hypertrophied as is often taught. During pregnancy the work of the heart is greatly increased, owing to the larger quantity of blood and the resistance to the circulation caused by the enlarged uterus. During labor the greatest strain comes upon the heart, the blood pressing strongly upon the ventricular walls with the contraction of the uterus, while the right heart does not receive venous blood as usual, and, hence, the partial cyanosis which is so often observed. After the birth of the child the abdominal pressure sinks, while the right heart becomes overfilled. To obviate the disturbances caused by this change of pressure a large sand-bag may be placed upon the abdomen so soon as the presenting part passes through the vulvar orifice; the bag should be retained, for at least an hour. Several forms of cardiac disease are found during pregnancy: adhesion from pericarditis, degeneration of the heart muscle, valvular heart disease, and endocarditis grafted upon a chronic form may be present.

In the treatment of these cases, if the patient passes through pregnancy without bad symptoms, treatment should be confined to keeping the bowels open and avoiding fatigue and climbing of stairs. Compensatory disturbances may appear as early as the ninth week, although usually not until the fifth month. Albuminuria is a serious complication. These cases are best treated by arsenic, iron, and strychnia, while ether and ammonia should be given for attacks of syncope; if serous effusion with dyspnœa be present digitalis or strophanthus may be employed. Over-exertion and straining during defecation should be carefully avoided. During labor the patient will be better in a sitting posture if severe dyspnœa develops; ether and brandy must be given by injection. The patient should be delivered so soon as dilatation will permit; if dilatation is not complete, incision may be practiced; ether should be used as an anæsthetic. After the birth of the child a twelve-pound sand-bag should be laid over the fundus of the uterus to counteract the rapid fall from abdominal pressure.

The greatest danger to the mother, however, lies in the first few days of the puerperal state. Post-partum bleeding should not be prevented; but if anything, a moderate loss of blood will relieve the patient. Ergot is often followed by good results. In cases of great dyspnœa and cough, nitrite of amyl should be inhaled; better results are obtained from this agent than from venesection.

Phillips reports four cases, one of aortic stenosis, two of mitral disease, while the fourth was a case of chronic mitral disease in which labor was followed by acute endocarditis with regurgitation. In one of his cases of chronic mitral disease the patient was not seriously ill until the third day after delivery, when she was suddenly attacked by profound syncope; three of his cases recovered from labor, while the fourth perished from endocarditis.

In studying the literature of the subject Phillips finds that labor should not be induced. Two-thirds of the cases which he collected perished during the puerperal state. These patients are especially liable to septic infection.

Deep Incisions of the Parturient Cervix for Rapid Delivery.

In the *American Journal of Obstetrics* for June, 1895, **Edgar** contributes an interesting and valuable paper upon this topic. He reports three cases in which this operation was performed for eclampsia; one of his patients died from nephritis, the other two recovered. Edgar gives a full and interesting explanation of the method of performing this operation and of the result as shown in patients whom he had examined some time after delivery. He employs blunt, angular scissors which are inserted within the cervix, and incisions made to the utero-vaginal junction; four incisions are made at right angles to each other; the result is complete dilatation, while very little hemorrhage occurs. If the incisions are carried sufficiently far the uterus does not tear while the head passes through, but if the incisions are but partially complete the uterus may tear in the line of incision. The four flaps usually made do not require suture, as it has been shown by examination that they will heal throughout the greater portion of their extent if cleanliness be maintained. Edgar adds to his paper an excellent illustration from a post-mortem specimen showing the complete dilatation which follows these incisions.

This paper furnishes the best account of this operation and its results which has yet appeared in English. Obstetricians are familiar with Dührssen's writings upon the subject and with the excellent results which he has obtained.

The Interruption of Pregnancy on Account of Mental Disease.

Valenta reports in the *Archiv für Gynäkologie*, Band xlix., Heft 1, the case of a primigravida of bad hereditary history, who became excessively hysterical when she discovered that she was in a pregnant condition; her paroxysms resembled those called clownish hysteria. She became so weakened and emaciated by the disorder that it was necessary to empty the uterus. It was interesting to observe that from the moment the membranes were ruptured and the amniotic liquid escaped there was a marked improvement in the patient's condition. The case must be considered as one of excessive nervousness in a patient whose heredity was so bad that no reason for encouragement existed as regards the prognosis of her case or the continuation of pregnancy.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,

OF NEW YORK.

GONORRHŒAL ENDOMETRITIS.

In the discussion on endometritis before the recent German Gynecological Society, WERTHEIM (*Centralblatt für Gynäkologie*, 1895, No. 26) made the following deductions with regard to gonorrhœa of the uterus. Next to the urethra the uterus is the favorite seat of gonorrhœal infection. As a rule, the uterus is directly infected, and the disease is not infrequently confined to the organ. An acute and a chronic stage of uterine gonorrhœa are admissible, though the distinction cannot be sharply drawn. In the former typical gonococci are found in large numbers, but as the purulent secretion diminishes they become less numerous and are replaced by other bacteria. In eighteen uteri removed *per vaginam* for disease of the adnexa the reporter found cocci in eight, while they were absent in six specimens where the patient gave a clear history of gonorrhœa. In uterine gonorrhœa there is nearly always present an acute interstitial endometritis, though in a few cases the process is the more chronic glandular variety. In many instances there is an inflammatory infiltration of the muscle, with hyperplasia of the vessel walls. The accompanying enlargement and sensitiveness of the uterus are due to the metritis.

The inflammatory changes in the cervical tissue are least marked in the neighborhood of the os externum. The gonococci are most easily found in the mucosa and are few in number in the deeper tissues.

In five nulliparous uteri gonococci alone were found, so that mixed or secondary infection could be absolutely excluded. The latter seems to be much more rare than in gonorrhœal salpingitis. In order to decide whether the os internum offered an obstruction to the upward extension of the gonorrhœal infection, the writer selected five cases in which the adnexa were apparently healthy, and removed bits of endometrium with the sharp curette. Microscopical examinations demonstrated the fact that in every instance the corporeal endometrium contained cocci. Hence the conclusion that the frequent statement that the os internum opposes no hindrance to the ascent of the infection is erroneous.

Exacerbations of uterine gonorrhœa are often due to the influence of menstruation, coitus, or intra-uterine treatment, which cause a change in the character of the endometrium, though in many cases there is undoubtedly fresh infection. During the puerperium there is often an invasion by the cocci of tissue previously unaffected.

BACTERIOLOGY OF ENDOMETRITIS.

In the same discussion (*Ibid.*) DÖDERLEIN, referring to the influence of micro-organism as an etiological factor in endometritis, states that the presence of organisms of every variety in the cavity of the puerperal uterus is of pathological importance. The terms pyogenic and sapræmic endometritis are more correct than those of catarrhal, purulent, diphtheritic, or gangrenous puerperal endometritis. The pyogenic form is most common in puerperæ, and is the origin of the virulent general infection sometimes observed. The streptococcus pyogenes is nearly always the active agent, though staphylococci, gonococci, and the bacterium coli commune may be etiological factors. The specific micro-organisms of so-called sapræmic endometritis have not yet been isolated.

Operations on the Adnexa during Pregnancy.

Delagénière (*Arch. Journ. de Chir.; Centralblatt für Gynäkologie*, 1895, No. 26) reports three successful cases of cœliotomy during pregnancy. In one the patient had an attack of peritonitis during the third month, and when this subsided an ovarian tumor was discovered on the left side, the pedicle being found to be twisted when the abdomen was opened. The cyst, which was generally, though not firmly, adherent, was removed, and the patient went on to full term and had a normal confinement.

The second patient, five months pregnant, suffered from general abdominal pain and tenderness, with tympanites and obstinate constipation. On opening the abdomen it was found that both tubes were much enlarged and contained a bloody fluid, the ovaries being nearly normal, while several coils of intestine were adherent to the uterus. The adhesions were separated, and both tubes and ovaries were removed; the patient had a normal convalescence and was delivered at the usual time, the only symptom noted being a sudden attack of abdominal pain a few hours after the delivery, attended with vomiting, which lasted only a short time, and was probably due to the separation of an adhesion. In the third case a movable dermoid cyst was removed during the fifth month without interruption of the pregnancy, which concluded normally.

The writer infers from his experience that so far from pregnancy being a contraindication to ovariotomy, it is actually an urgent indication for operative interference. The prognosis as regards the continuance of pregnancy is better if the operation is uncomplicated and it is not necessary to handle the uterus.

Total Extirpation of the Uterus *versus* Castration.

Fritsch (*Deutsche med. Wochenschrift*, 1895, No. 24) discusses this question in general, setting forth the disadvantages of removal of the adnexa alone. In the case of uterine fibroids not only may the tumor continue to grow after the latter operation, but it may undergo degenerative changes similar to those noted after torsion, that is, its blood-supply is partially or wholly cut off, and cystic or necrotic degeneration follows, while the hemorrhages may continue. Again, there is the possibility that the supposed fibroid may be a sarcomatous growth which will eventually destroy life. The number of cases in which it is necessary to extirpate the uterus, where the adnexa have been removed several years before for the relief of pain, dysmenorrhœa, and reflex neuroses, prove the necessity of removing the organ at the time of the first operation. Inflammation around the stumps, and the resulting nerve-irritation, may give rise to the same pains as before, while menstruation continues—symptoms which may persist for years until the exudates are absorbed. Silk ligatures are responsible for not a few of these troubles.

The writer states that as the result of his experience he has for several years been of the opinion that total extirpation should be performed in all cases in which the adnexa alone were formerly removed, since he cannot otherwise promise the patient a radical cure. Wherever it is possible he removes the ovaries with the uterus, believing that in young women the climacteric symptoms are the less distressing.

The most important point to be borne in mind is the remote result of the operation, and experience has shown that this is more favorable after total extirpation than after castration. At the same time it must be admitted that extirpation seems to the patient, as well as to the physician, to be a more formidable procedure.

The writer prefers the vaginal route, even for fibroids of considerable size, but still performs cœliotomy in cases of pyosalpinx!

VAGINO-FIXATION.

GILBERT (*St. Petersburger med. Wochenschrift*, 1895, No. 22), reporting several cases of vagino-fixation by Dührssen's method, notes the objections which have been made to the operation. To the criticism that the uterus is left in a condition of pathological anteflexion, he replies that, although this condition may seem to exist at first, the organ is subsequently found to be in normal position. This change is assisted by adopting Dührssen's suggestion of making frequent traction upon the portio, so as to throw it further backward.

Sänger has raised the objection that the vagina is too distensible to support the weight of the uterus for any length of time, and will eventually become so relaxed that the organ will remain fixed and at length become retroverted. The writer replies that this is entirely a matter of experience, and that such a result has not yet been obsevered. If the vagina is relaxed colporrhaphy should be performed.

He calls attention to the fact that the operation is not applicable to cases in which it would be necessary to separate firm and extensive adhesions before replacing the uterus; in these ventro-fixation is indicated.

ABSCESS OF THE CORPUS LUTEUM.

LANGER (*Archiv für Gynäkologie*, Band xlix., Heft 1) reports five cases of isolated abscess of the corpus luteum operated upon at the Prague clinic within a month, which he found on microscopical examination to arise from suppuration of a pre-existing corpus luteum, as shown by the presence of the characteristic cells. These are to be distinguished from abscesses that develop from a Graafian follicle or corpus luteum cyst, which are the kind usually described.

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF
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Tuberculous Meat and Milk.

In the *Report of the Royal Commission on Tuberculosis* (*The Veterinary Journal and Annals of Comparative Pathology*, June, 1895) the commissioners state explicitly that tuberculosis is the same disease in man and in the food animals, regardless of differences in its manifestations and regardless of its origin in tuberculous food or otherwise Experiments on the effects of feeding pigs, guinea-pigs, and rabbits on uncooked milk and meat from tuberculous animals proved that the disease will thus be caused in a large percentage of the subjects used. In these experiments no particular examination for actual tubercle in the food material was made, but care was taken to avoid any obvious mass of tubercle. Control experiments with animals kept under similar conditions, but receiving no tuberculous food, gave negative results. Uncooked tuberculous matter (meat from tuberculous animals, and material containing tuberculous matter recognized as such) produced the disease in 8 pigs, 5 cats, 56 out of 84 guinea-pigs, and 8 out of 10 calves that were fed with it.

Tuberculous matter in food is found principally in the organs of the animals, while in muscle and muscle-juice the bacilli are very seldom met with. But the meat may become contaminated from the actual tuberculous lesions present in other parts of the carcass, by the hands, knives, and cloths of the butcher during the processes of slaying and dressing. The greater the amount of tubercle in the animal the more the likelihood of this contamination; and since, when meat is infective it is commonly so by reason of accidental contamination with tuberculous material, it follows that more depends on the care taken in guarding against contamination than on anything else. It is further pointed out that the carcass of an animal perfectly free from tuberculosis may become infective by contact, direct or indirect, with one which is tuberculous. And, also, that a great deal of meat from tuberculous animals may be consumed with impunity if sufficient discrimination and care are exercised in slaughtering and dressing. Any part containing any tubercle whatever should be removed and destroyed, and the whole carcass in cases where the animal is found to have advanced or general tuberculosis. The condition required for causing the milk of tuberculous cows to be infective is tuberculous disease of the udder, and this may be found in mild or advanced stages of tuberculosis. No bacilli were found in the milk of 8 tuberculous cows with healthy udders, and no results were obtained from feeding 41 animals and inoculating 28 with the milk. Milk containing the bacilli taken from 3 cows with disease of the udder produced the disease in 13 animals inoculated and 15 fed with it. That from a cow with udder disease, but showing no bacilli, caused tuberculosis in 4 of 10 animals fed with it, and in all of 6 others in which it was inoculated.

Not alone the milk from cows with udder disease, but the butter, skimmed milk, and buttermilk derived therefrom are shown to produce tuberculosis. The rapidity with which the disease of the udder may spread leads to the conclusion that no tuberculous animal of any kind should be allowed to remain in a dairy.

Ordinary cooking suffices to destroy the harmful quality of tuberculous matter, but however high the temperature may be near the surface it seldom reaches 60° C. in the centre of a joint of more than three or four pounds. In the case of milk the tuberculous matter is rendered absolutely innocuous by putting the milk over the fire and taking it off as soon as it boils.

Disinfection of Tubercle-infected Houses.

The experiments of Mr. Sheridan Delépine and Dr. Arthur Ransome (*British Medical Journal*, Feb. 16, 1895) led to the following conclusions:

The disinfection of rooms which have been contaminated with tuberculous products cannot be obtained by means of the fumigation methods, such as are generally used at present. Sulphurous acid, chlorine, and euchlorine, as used under supervision by experienced municipal disinfectors, have proved practically useless.

The only other method of disinfection which seemed to promise more satisfactory results was the direct application of a solution of chlorinated lime to the walls to be disinfected. This method has given so far satisfactory results, but is attended with discomfort on the part of those who have to carry out the disinfection.

Light is, in the case of the tubercle bacilli, as it has been proved by several observers to be in the case of other organisms, the most important natural disinfecting agent.

Simple drying was shown to be in itself enough to reduce and ultimately entirely destroy the virulence of tuberculous products. Mere ventilation in the dark suffices only to diminish and not to destroy the power of the microbe.

Prevalence of Bovine Tuberculosis.

Dr. Austin Peters (*Boston Medical and Surgical Journal*, cxxxi., p. 525) states that in Mexico bovine tuberculosis is exceedingly common, about 34 per cent. of the animals slaughtered being found affected. In England also it has long been recognized as a very common disease among animals, especially the bovine species. In this country tuberculosis is the only one of the four great bovine scourges, and during the past few years many of the States, especially in the East, have taken steps to eradicate this one. In New York in districts where the herds are made up largely of hardy grades of the Ayrshire, Holstein, and short-horn families, about 1 per cent. of the cows are tuberculous, while in districts where more cattle of the Channel Island breeds are found, between 2 and 3 per cent. are tuberculous. In Eastern Massachusetts it is much more frequent than this.

Abattoir statistics show that tuberculosis is rarely found in calves killed for veal and in steers and oxen killed for beef. It is almost unknown among our Western beeves. It is seen chiefly in cows slaughtered for food, and is met with most frequently among dairy cows from the outskirts of large cities and towns, particularly among the older cows. The two great predisposing causes are overcrowding in unsanitary stables and the depleting influences of lactation.

The records of the Copenhagen slaughter-houses (*Report of the Royal Commission on Tuberculosis*) show the following totals for four years, 1890–93, inclusive:

Of 132,294 beef cattle, 23,305 showed tubercle (17.70 per cent.). Of 8292 swine, 1272 showed tubercle (15.30 per cent.). Of 185,765 calves, 369 showed tubercle (0.2 per cent.). Of 337,014 sheep, 1 showed tubercle (0.0003 per cent.).

The records of the Berlin slaughter-houses for 1892–93 show as follows:

Of 142,874 beef cattle, 21,603 showed tubercle (15.1 per cent.). Of 518,073 swine, 7055 showed tubercle (1.55 per cent.). Of 108,348 calves, 125 showed tubercle (0.11 per cent.). Of 355,949 sheep, 15 showed tubercle (0.004 per cent.)

THE HYGIENIC IMPORTANCE OF LIGHT.

Aside from its influence in other directions, light has a very important action as a disinfectant as is shown by W. KRUSE (*Zeitschrift für Hygiene und Infectionskrankheiten*, March 15, 1895). It has a destructive influence on living bacteria, the intensity of its action being dependent on the amount of oxygen present. With increased intensity of light comes increased disinfecting power. It does not act thus by reason of any heating influence, although the effect is greater the higher the temperature. The greater the relative number of bacteria, the slower appears the action of the light to which they are exposed; and the medium in which they exist has considerable influence on the result. Liquid media containing complex nitrogenous substances are so altered by the influence of light that they take on antiseptic properties against the bacteria. This change ensues under the influence of the atmospheric oxygen, and is manifest so much the more according to the intensity of the light and duration of exposure.

HYGIENE OF SLAUGHTERING.

According to J. A. DEMBO, of St. Petersburg (*Deutsche Vierteljahrsschrift für öppentliche Gesundheitspflage*, Bd. xxvi., p. 668), the Jewish method of slaughtering is the most rational from a hygienic standpoint, for in consequence of the rapid and more or less complete bleeding, and also of the convulsive movements which occur toward the end of the bleeding, lactic acid is developed, which, through its further chemical action on potassium phosphate, forms potassium lactate and acid phosphate of potassium. The latter hinders the development of micro-organisms, delays the formation of ptomaines and other poisonous substances, and improves the taste. The small amount of blood left in the animal becomes less alkaline, and, therefore, a less favorable soil for the development of bacteria. The convulsive movements cause the meat to be more tender, and improve its appearance. Furthermore, by reason of the earlier occurrence of rigor mortis, the meat is the more quickly ready for use, and will keep several days longer than ordinarily.

SOAP AS A DISINFECTANT.

DR. MAX JOLLES (*Zeitschrift für Hygiene und Infectionkrankheiten*, January 25, 1895) reports that according to his experiments soap possesses a decided disinfectant power against the most common pathogenic micro-organisms, and is especially adaptable in those cases where it is the most natural agent for the purpose, that is, for the cleansing of dirty and infected linen, etc. (in cholera and typhoid fever, for instance). It possesses, in addition to its cleansing and disinfecting power, the advantage over other disinfectants of causing no injury of any sort.

HEALTH OF AMERICAN CITIES.

According to DR. ARTHUR B. REYNOLDS, Commissioner of Health (*Annual Report of the Department of Health of the City of Chicago for the Year ended December* 31, 1894) Chicago is the healthiest large city in the world. Computed on the discredited official census taken in April, 1894, the death-rate is lower than ever before recorded for a city of more than 200,000 inhabitants. The figures of the official census (1,567,727) are declared to be too low, and those based on the school enrollment (1,678,967) are deemed to be worthy of acceptance as correct. But, accepting the figures of the official census, the death-rate for 1894, on this basis, was but 15.24. A table of death-rates of 1894 of all cities of the United States having a population of more than 200,000, compiled from the latest and most authoritative information, shows that Chicago stands at the head with the smallest death-rate, 15.24, followed by Detroit (15.49), Milwaukee (15.71), Cleveland (15.86), St. Louis (16.13), Buffalo (16.76), Pittsburg (18.17), Philadelphia (18.28), Cincinnati (18.29), San Francisco (18.85), Baltimore (19.11), Brooklyn (20.14), Washington (20.23), New York (21.05), Boston (22.99), and New Orleans (24.88).

CORRIGENDUM.

In Dr. Althaus's paper on Hypochondriasis and Nosophobia, in the July No., on page 6, line 19 from top, read "*Brachet sen.*" instead of *Brachetsen.*

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ON SO-CALLED "CONGENITAL CHOREA."

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The disease to which the term chorea has come to be almost entirely confined, viz., chorea minor, or Sydenham's chorea, is essentially a disease of childhood, the vast majority of cases occurring between the ages of five and fifteen; but common though it be in childhood, it is very rare indeed in early infancy, very few cases having been recorded under four years of age. One or two have been met with in children at the breast, and from time to time accounts appear in the medical journals of instances of "congenital chorea." In systematic treatises on medicine these cases, as a rule, are not even referred to. Hilton Fagge, however, mentioned Richter's two cases (Cases III. and IV. in the following paper) and Long Fox's case (Case V.), and apparently accepted them as true examples of chorea (*Principles and Practice of Medicine*, 1886, vol. i. p. 639). Other writers of monographs on the subject—*e. g.*, Sturges, Angel Money, and others—make no reference to any congenital cases.

Gowers (*Handbook of Diseases of the Nervous System*, vol. ii., first edition) makes no mention of congenital chorea in his article on chorea; but on page 380, under the heading of "Infantile Meningeal Hemorrhage," he says: "When the spontaneous movements constitute the most conspicuous symptom the state has been described as 'congenital chorea.'" He, therefore, evidently regards these cases as due to irritation of the motor part of the cerebral cortex due to meningeal hemorrhage at the time of birth.

A case which came under my care early in this year directed my attention toward and aroused my interest in the whole subject of congenital chorea, and raised the question whether cases really do occur which can fairly be classed as examples of this condition, or whether all recorded cases are not rather to be regarded as the result of irritative lesions of the cortical motor areas in the brain, and not as due to a merely functional instability of those centres such as presumably exists in true chorea minor. In all the cases, with the exception of one (that of Heller, which belongs to an entirely different category from the others), the disease has been of an essentially chronic nature, lasting for years or persisting through life, and this is, I think, sufficient reason for definitely separating the condition from Sydenham's chorea, the duration of which is usually to be measured by weeks, and when apparently indefinitely prolonged there are marked variations in the violence of the choreic movements at different periods of the illness, suggesting that we have not to deal with one attack of chorea, but with a series of relapses, a fresh attack commencing before the former one has passed away.

In these cases of so-called congenital chorea, on the other hand, the movements either remain apparently unaffected by the lapse of time, or there is a gradual improvement up to a certain point, though complete cessation of the movements has not been recorded; indeed, in some few cases the disease appears to have been of a progressive character.

Of late years some of these have been regarded as cases of Huntington's chorea, a disease with which they have certainly more points of resemblance than with Sydenham's.

This chronic, progressive, hereditary chorea, to which the attention of the profession was first effectually drawn by Huntington (*Philadelphia Medical and Surgical Reporter*, April 13, 1872, No. 15), although cases had been previously described, is distinguished chiefly by its affecting various members of the same family, by its usually appearing between the ages of thirty and forty, and by its hereditary nature.

Some of the children of an affected parent almost invariably suffer from the disease as soon as they reach the period of life at which it manifests itself; but, if one or two members of the family happen to escape, their children are free from the risk of incurring it; the chain is, as it were, broken.

The movements differ from those of ordinary chorea in that they are slower, and that the patients are able almost to the end to exercise a certain amount of voluntary control over them, so as to do work which does not require very careful, delicate manipulation. The gait also is peculiar, the patient walking in a reeling manner suggestive of intoxication; frequently, for instance, staggering from the sidewalk on to the road, and back again.

Other prominent features of the complaint are its progressive character and the mental deterioration with which it is accompanied, so that finally the movements become very violent and the patient quite demented, toward the end being helpless and bedridden, until death ends the scene.

A case has been recorded in which the disease began as early as eight years of age in a boy, a member of an affected family.

In cases in which an autopsy has been made some atrophy of the cerebral convolutions has been found with an increase of connective tissue—changes very similar, though less in degree (as Osler remarks, *Journal of Nervous and Mental Disease*, 1893, xx. p. 107), to those found in general paralysis of the insane. There is evidently an hereditary tendency to early degeneration of the cerebral cortex, affecting first, and for some time chiefly, the motor areas.

In one case, that of a woman whose sister suffered from similar choreic movements, outgrowths from the dura mater were found pressing upon and causing atrophy of the cortex in the Rolandic and prefrontal areas. (Macleod: *Journal of Mental Science*, July, 1881.) In cases of congenital spastic paraplegia due to meningeal hemorrhage a wasted condition of the central convolutions has been found, the atrophy having been accompanied by induration. A less degree of this would resemble closely the lesion found in cases of Huntington's chórea. It is, therefore, not surprising, that some cases of choreiform movements arising from hemorrhage irritating the motor cortex, or due to a developmental fault, or possibly to a congenital degeneration in this region, should present considerable points of resemblance to these cases, the condition of the cortex being very similar in both sets of cases, although the cause producing it has been different.

No autopsy has yet been made upon any case recorded as one of "congenital chorea;" we can, therefore, only reason from analogy and from the symptoms presented by the patients as to what the lesion is likely to have been in each case.

I now propose to give a short abstract of recorded cases, and to examine briefly the claims of each to be called chorea; prefacing them with an account of my own case, as there is one point in connection with it which I consider to be of very great importance for the purposes of this inquiry.

Case I.—The patient is a boy, aged twelve years, somewhat small for his age. There was nothing noteworthy during his mother's pregnancy. She had no fright and sustained no shock. The child was born at full time after an easy labor, there being no prolonged delay in the passages, no faulty presentation, and no necessity for instruments. The child was not asphyxiated when born; but from his birth up to the present time he has been in a continuous state of involuntary movement; sudden sharp jactitations and jerkings of the limbs, facial contortions, smacking of the lips, and occasional long shivering inspirations such as are met with in cases of ordinary chorea.

The movements are bilateral, almost evenly distributed, but possibly more marked on the left side than on the right. They cease entirely during sleep.

There is no evidence of any organic disease or mechanical irritation of the brain. The child has never had fits, there is no muscular rigidity to be made out, and the tendon-reflexes are not exaggerated though well marked. The knee-jerks present the peculiarity so often seen in ordinary choreic children, viz., that when the leg is thrown forward in response to the stimulus, instead of falling back at once it remains extended for an appreciable interval. There is no ankle-clonus.

Muscular force is good, and there is no sign of paralysis.

The boy is very bright and sharp, but his education has been neglected and he has been kept away from school a great deal as the other boys tease and torment him on account of his infirmity. He was, however, somewhat slow in learning to talk and walk—being two years old before he talked, and three years old before he walked. His speech is still of a stammering, explosive character, which is sufficiently accounted for by the involuntary movements of the lips and tongue. In other respects he is not a backward child. The movements are, according to his father's account, gradually getting less. Three years ago he could hardly walk across a room without falling about; now he walks very well and merely presents the appearance of an ordinary choreic child.

He has at times suffered from severe (rheumatic?) pains in his joints, particularly in his shoulders. There is no cardiac lesion. As regards the family history, the only important points are that no other member of the family has been affected in the same way, and that the father had a severe attack of rheumatic fever when a boy, and has been subject to "rheumatics" ever since.

The child's father was absolutely certain that the movements had existed from birth, the midwife who attended the mother at her confinement having drawn attention to them. The patient was most carefully observed on several occasions, and the movements carefully watched. They were always typically choreic, and there was absolutely nothing about them to suggest double athetosis, the total absence of weak-mindedness, paralysis, rigidity, and increase of tendon-reflexes tending to confirm the view that the case was one of true congenital chorea.

I therefore showed the patient at a meeting of the Medical Society of London as an example of this disease. Whether the excitement incidental to appearing before so many strangers had the effect of changing the character of the movements or not I am not prepared to say, but the slow, writhing movements of the fingers, toes, and lips on that occasion were as typical of athetosis as the short, jerky movements previously exhibited by the patient had been typical of chorea.

The lesson to be drawn from this case is an extremely instructive one, viz.: that there is no hard-and-fast line to be drawn between the movements of athetosis on the one hand and that of congenital chorea on the other; that the same patient may at one time furnish an example of the one condition, and again under different circumstances be an equally striking example of the other. When we consider how much more frequent cases of double athetosis are than these cases of so-called congenital chorea, that both conditions are usually associated with mental feebleness, and that we have in this case a proof that the same patient may, from the same cause, be at one time an excellent example of the one condition, and at another an equally excellent example of the other, I think we are justified in concluding that there are strong reasons for believing that all the choreic cases have really been cases of double athetosis in its choreic form.

Any one seeing the child as I repeatedly saw him when he was quiet and not excited, especially had he been ignorant of the fact that the movements dated from birth, would have unhesitatingly called the case "chorea;" whilst no one could have hesitated to call the condition presented by the child before the medical society "double athetosis."

In the discussion which followed the showing of the case Dr. Archibald Garrod stated that he had under his care at the Children's Hospital, Great Ormond Street, an almost exactly similar case, in which he had wavered for some time between a diagnosis of congenital chorea and one of double athetosis.

As regards previously published cases, some of the accounts given are so very meagre as to be practically useless, and in some frequently quoted cases there is nothing more than a bare statement that they were choreic, and that the movements had dated from birth.

These I will briefly refer to.

Germain Sée (*Mémoires de l'Académie de Médecine*, 1850, p. 449) mentions that Monod had met with cases of congenital chorea, but although barely mentioning the fact he (Sée) throws doubt upon their nature, and inclines to the belief that they were cases of intracranial or intracerebral disease.

Von Ziemmsen also refers to Monod (*Cyclopædia of Medicine*, vol. xiv. p. 420).

Erdmann (*Sitzungsberich. der Gesellsch. für Natur und Heilkund.*, January, 1867) states that two cases of congenital chorea had come under his notice.

Haven (*Boston Medical and Surgical Journal*, 1881, p. 297), in an analysis of two hundred cases of chorea, mentions that two "were said to be congenital."

Collins (*New York Medical Journal*, vol. lvi. p. 159, and *Journal of Nervous and Mental Disease*, 1892, p. 726) mentions the case of a child suffering from choreic movements which had persisted from birth, and whose mother had also suffered from chorea.

It is obvious that nothing can be deduced, one way or another, as to the true nature of these cases from such scanty data, and they may therefore put aside as useless.

Two papers dealing with the subject I have been unable to obtain (Drake: "A Case of Congenital Chorea," *Western Medical and Physical Journal*, Cincinnati, 1827–28, p. 193. Dunn: "Two Cases of Congenital Chorea," *Virginia Medical Monthly*, 1892–93, vol. xix. p. 825).

CASE II.—Of more fully recorded cases the first in chronological order is that of Mayo (*Outlines of Human Pathology*, 1836, p. 170). This case is quoted in almost every article written upon the subject of congenital chorea; I therefore make no apology for transcribing his description almost in full.

The mother when in the fourth month of pregnancy was much frightened. "She was for two months in a state of extreme nervous illness from this cause, but she recovered and went her full time. She remarked, however, that the child was extraordinarily lively in the womb, so that at times she was overcome by the sensations she experienced. The child, a female, at the instant of its birth displayed the *writhing* motions of chorea (the italics are mine); they have continued ever since. She is now thirty years of age, yet looks but an elderly child. Her head is remarkably small and narrow; she is thin and emaciated; the mind is hardly removed from complete idiocy: she says nothing but an ill-articulated 'yes' and 'no,' and is continually turning and *writhing* herself about, except when asleep."

This description is hardly suggestive of "chorea" as we understand the term of the present day, whilst it would answer admirably, as far as it goes, for a description of double athetosis with imbecility. The occurrence of the word *writhing* twice over is in itself extremely suggestive, as no word could be more inapplicable to the sudden sharp movements of chorea, and no word could be more truly descriptive of the slow twisting movements of athetosis. The mental condition of the patient also is more than suggestive of gross organic cerebral lesions, and there is little doubt that the case was one of imperfect cortical development, of meningeal hemorrhage, or of thrombosis. The first condition I consider to have been the most probable from the history. There is naturally great difficulty experienced in judging of the exact nature of these earlier cases, as we have no account of the state of the tendon-reflexes to guide us. This remark applies equally to some of the subsequent cases, even to some published at a period when such an obviously important point should not have been overlooked.

Richter has recorded two cases.

CASE III.—The mother of the first patient was much alarmed by being in the thick of the fighting in Dresden in May, 1849, toward the end of her pregnancy, and immediately afterward the child, a daughter, was born. From its birth violent clonic spasms "of all its voluntary muscles" were observed, which ceased completely during sleep. Richter frequently examined the child and satisfied himself that the special senses and the intelligence of the infant were normal, and diagnosed the case as one of congenital chorea.

As she grew up the movements gradually became less marked, and as a young woman there were only occasional twitchings of the neck and face, and she was able to do needlework well.

Case IV.—His second occurred in the daughter of a woman who was greatly shocked and distressed by the sudden death of her husband shortly before the child's birth. Here again there were violent choreic movements observed immediately after delivery which persisted, ceasing only during sleep. These were looked upon as evidence of organic disease of the brain by those who saw the case before Richter. He, however, came to the conclusion that it was a case of chorea, and regarded it as spinal in origin. She learned to walk and talk, but had considerable difficulty with her school-work. She was bright and merry. Her speech was monotonous and complaining in character; and "g" and "ch" were pronounced as "s". When nervous she twisted hands, neck, etc., in a choreic manner.

Both girls were well developed.

In these cases again no mention is made of the state of the reflexes. The description of the movements rather suggests a slight degree of double athetosis than chorea proper, and the slow, steady improvement is in accordance with what one meets with in cases of congenital spastic paraplegia. The lesion must have been a comparatively slight one.

Case V.—Long Fox (*British Medical Journal*, 1873, vol. ii. p. 9) has recorded a very interesting case of a boy, aged thirteen years, suffering from "congenital chorea." His mother was frightened at the end of the second month of pregnancy. He was born about six weeks before his time. He had had chorea from his birth, and had always been as bad as he was at the time of his admission to hospital, if not worse. Lately he had learned to say a few words. Up to that time he could not speak at all, but could hum tunes in an indistinct way and make various noises. He could not stand or hold anything firmly. His education had been neglected, but he was very sharp and very merry. Most of his movements showed great deficiency of co-ordinating power, but he could combine movements for the purpose of scuttling along the floor in a wonderful manner, one leg being stretched out in front and the other behind, whilst he paddled along with great speed with one hand.

He was almost always in motion, except during sleep, and then was quite still. He had fits at three years old, but not since. There was no rheumatism or heart disease or any morbid family history.

He was put upon arsenic. After a few weeks he began to say more words and was much less restless. He walked with the help of one hand, and could stand without assistance, although on admission he could not lift himself up without being held. He was "exceedingly intelligent." Playing at ninepins brought him on considerably, and so did the association with and imitation of two non-choreic boys in the ward.

This case is an extremely interesting one as showing what may be done by intelligent treatment in such cases. The facts of the boy having been a "seven-months' child" and his having suffered from fits at three years old point to an extreme instability and probably a want of development of the cortical motor cells. At all events, it is justifiable to presume that their control over the lower motor centres was congenitally less than normal, and I am, therefore, inclined to class this case with those of developmental defect in the motor centres in which motor symptoms predominate, and not with true chorea.

Heller's case (*Wien. med. Wochenschr.*, 1876, vol. xxxvi. p. 456) is an example, as I have mentioned above, of an entirely different disorder to those with which I am now dealing, and will be treated separately later.

CASE VI.—Rieder (*Munch. med. Wochenschr.*, 1889, p. 623) has recorded at great length a case of chronic congenital chorea with imbecility. The patient was a woman, aged twenty-six years. There was nothing noteworthy in the family history. Her mother had been frightened during her pregnancy by the sight of a choreic man. From birth she had suffered from involuntary movements of the face and arms; she was also slightly deaf, and this deafness had of late years graudally increased.

She learned to walk at four years of age, and to speak at three; but her speech was very defective, and had not improved. She was irritable and passionate, and her mental power was of a very low order, although she could to a certain extent read and write. She was very easily alarmed.

She was subject to night-terrors, and her sleep was usually very disturbed. A year before Rieder saw the patient she had borne a child, which was the subject of the same involuntary movements as its mother. The child, however, died when little more than a fortnight old.

The symptoms in this case had been marked by progression, the movements being much worse than in infancy. For about a year the patient had complained of pains in the head, coming on every day, and often accompanied by sickness.

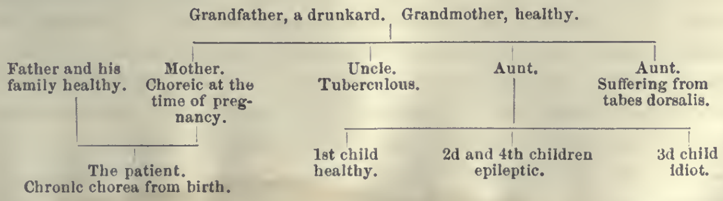
The patient wrinkled her forehead, opened and shut her mouth and eyes, twisted and turned her head, stretched out and bent first one then the other finger, then the whole hand moved, the shoulders, and so on. The movements were most severe in the face, and became more severe on intentional movement, as in the attempt to lay hold of anything. Walking was only accomplished with difficulty.

The pupils were dilated and reacted only sluggishly to light. Sensation was normal. Both tendon and superficial reflexes were increased.

In this case we have sufficient evidence of organic cerebral disease in the mental deficiency, deafness and increased reflexes. That such disease was of a developmental character is highly probable, and this proability is strengthened by the fact that the patient's child had the same developmental defect, as evidenced by the involuntary movements displayed during its short life. This case approaches very closely to Huntington's chorea, especially in its progressive and hereditary nature; but it is certainly very far removed from ordinary chorea minor, and the description of the movements of the hands and fingers is particularly suggestive of double athetosis.

Case VII.—Gray (*New York Medical Journal*, 1892, vol. lvi. p. 169. *Journal of Nervous and Mental Disease*, 1892, vol. xix. p. 726) has recorded a case which he considered to be one of congenital Huntington's chorea. There had been no similar trouble in other members of the child's family, and the general history was negative. The choreic movements had been noticed immediately after birth. The infant was a seven-months' child. Collins remarked upon this case that the lesion was probably one of lack of development of the cortical motor areas, and that the too apparent lack of mental development could be taken as corroborative evidence of this. He might have added, as further evidence, the premature birth of the child at seven months. To call the case one of Huntington's chorea seems a little far-fetched, as it lacks all three cardinal characteristics of that interesting malady, inasmuch as (1) no other member of the patient's family had suffered from the disease; (2) it had not begun in adult life; (3) there is no mention made of its having been progressive in character. It is true that any one of these peculiarities may be wanting in true cases of Huntington's chorea, but when all are absent together there can be little to go upon in making a diagnosis, and in this case the nature of the movements is not described.

Case VIII.—Schlesinger (*Zeitschrift für klin. Med.*, Berlin, 1893, vol. xx. pp. 506, 515) gives a very full account of a man, aged twenty-four years, who had suffered from his birth from choreiform movements which had of late years become worse, as had also a difficulty of articulation from which he suffered, and his intellect was progressively becoming more feeble. His mother was suffering from chorea at the time of his birth, and there was a very neurotic family history, the chart of which is as follows:


Grandfather, a drunkard.
Grandmother, healthy.
Father and his family healthy.
Mother. Choreic at the time of pregnancy.
Uncle. Tuberculous.
Aunt.
Aunt. Suffering from tabes dorsalis.
The patient. Chronic chorea from birth.
1st child healthy.
2d and 4th children epileptic.
3d child idiot.

The mother had relapses of chorea lasting several weeks each year for four years after the patient's birth. The patient was apparently stillborn, the labor lasted a long time, and instruments had to be used. Twitchings in his face and hands were noticed from birth; at six months old he had fits which lasted several hours. He was late in learning to walk, and in his fourth year could only stammer a few words. He was backward in his school-work. From his earliest childhood his temper was ungovernable, and of late years the difficulty of walking and speaking had increased, and there was a striking diminution of intelligence and memory. There was no evidence of alcoholism or syphilis.

The chief points as to the state of the patient when he came under observation were that the forehead was continually wrinkled and the eyelids pressed firmly together, the upper lip twitched frequently, the lower one less often.

The right side of the face was much more frequently involved than the left. His speech was stammering and monotonous, but by no means "scanning." The hands and arms were quiet, as a rule, but on excitement they twitched. The fingers were spread out and then suddenly flexed, the hand moved upon the wrist, the thumbs adducted and turned in toward the palm. Spontaneous movements occurred in the toes, and the knees were occasionally involuntarily flexed and extended.

There was no spontaneous movement of the muscles of the trunk.

There was considerable analgesia in front of the lower half of the body on the right side. In both upper arms, particularly the right, there was also marked hypalgesia.

The patellar reflex on both sides was very much increased, but there was no ankle-clonus.

The skin-reflexes were greatly increased. The gait was somewhat like that of an intoxicated man, the feet being kept wide apart so as to give a wide base.

After these notes were taken the patient's condition rapidly deteriorated. The movements increased, and the intellect failed; fits of excitement being now followed by depression with a suicidal tendency. Schlesinger concludes that this was a case of meningeal hemorrhage, but regarded the form the disease took as due to an hereditary predisposition to chorea.

I am inclined to agree with him in his diagnosis in this case, as I think it more than probable that a meningeal hemorrhage was the original cause of these movements and of the patient's condition. The labor was exactly of the prolonged, tedious kind which so often causes congenital spastic paraplegia, and in this case the disorders of movement, from irritation of the cortical motor centres, predominated over the paralysis. The state of the reflexes bears out this view. In a patient with such a family history it is not surprising that a condition closely resembling Huntington's chorea should supervene upon these movements of double athetosis, the already existing organic cortical lesion acting as a predisposing cause. But I am extremely doubtful whether any *rôle* in the production of the symptoms should be given to the chorea which the mother suffered with at the time of the patient's birth. There is quite enough to account for all the symptoms without this.

CASE IX.—Diller (AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 1890, vol. xcix. p. 339) has recorded the case of a female imbecile, aged twenty-six years, a patient in the State Hospital for the Insane, Danville, Pa.

The father was alcoholic, the mother died of phthisis. A sister was also an inmate of the asylum. The patient had been feeble-minded and choreic from early childhood. She became unmanageable at home on account of her petulant, quarrelsome nature, and was disposed to seek improper male companions.

The patient was markedly choreic, the movements being typical. All the muscles were affected and equally. The speech was difficult and halting. The movements ceased during sleep. She stated that she could not remember when she was not affected with the movements, and that she was unable to walk until she was six or seven years old.

In a table which follows (p. 343) Diller enters this case as congenital, and I think, although the evidence given is not conclusive, that it probably was so. But here again we have most likely to deal with a developmental defect of the motor centres, and not with "chorea" in the true sense of the term.

These, then, are the cases from which our knowledge of "congenital chorea" is obtained, and it may be well to recapitulate and to summarize shortly the conclusions that may be drawn from them.

Some of them are too imperfectly recorded to be of any service. Of the remaining ten cases the first (my own) presented under conditions of excitement movements which were indubitably those of double athetosis, and to that category it undoubtedly belongs, although there was no other evidence of any brain-lesion beyond a delay in learning to walk and talk.

Case II. (Mayo's) was also, to judge from the state of the patient's intellect and the writhing character of the movements, an example of the same disease, defective cerebral development affecting largely the motor centres.

In Cases III. and IV. (Richter's) the nature of the movements as described, the mental condition in Case IV., and the slow, steady improvement with lapse of time, exactly corresponding to that which one observes in many cases of congenital spastic paraplegia, all point to a cortical lesion as the cause of the movements. The fact that the muscular jerkings did not entirely cease is also in accordance with this view.

In Case V. (Long Fox's) the patient was a seven-months' child; he had had fits at three years of age, and, in spite of his apparent intelligence, he had not learned to speak at all, although thirteen years old. Here, also, there was probably want of proper development of the cortical motor areas.

Case VI. (Rieder's) furnishes us with abundant evidence of cerebral disease in the imbecility, deafness, and increased reflexes.

Case VII. (Gray's) was a seven-months' child, and the mental capacity was apparently very small. This probably belongs to the same class of imperfect development.

In Case VIII. (Schlesinger's) the prolonged labor, the use of instruments, the asphyxiated condition of the child when born, the movements which followed almost immediately, the imbecility, and the exaggerated reflexes are sufficient to point with almost certainty to meningeal hemorrhage as the cause of the condition. The steady decline in the mental condition of the patient after attaining adult life, and the increase in the movements, certainly assimilate the case very closely to

Huntington's chorea; but in a patient with such a family history of neurosis with an organically damaged brain it is not surprising that this should be the case.

Case IX. (Diller's) is not quite so clear, but the fact of the patient's marked imbecility and the family history point strongly to developmental cerebral defect. It is to be regretted that the condition of the reflexes is not mentioned.

All of these cases were, in my opinion, examples of double athetosis, due either to developmental defect or to meningeal hemorrhage, injuring and irritating the motor cortex. In the two cases which appear to have been progressive (those of Rieder and Schlesinger) the disease approximates very closely to the condition known as Huntington's chorea; but, as in cases of that disease in which autopsies have been made, gross cortical lesions of a degenerate nature, or even actual outgrowths from the meninges, have been found, it is not surprising that the two diseases should resemble one another. It seems to me, however, that there is no justification for the term "congenital chorea" in these cases, and that, if distinction be necessary, "choreiform double athetosis" would be a much better and more truly descriptive title.

Several cases have been published, differing only from the foregoing in that the movements were not observed until some time after birth; *e. g.*, by Richter (*loc. cit.*), Brown-Séquard (*Medical Times and Gazette*, 1863, ii. p. 92), Osler (*Journal of Nervous and Mental Disease*, 1893, vol. xx. pp. 99, 100), and others.

Case X., Heller's case (*Wien. med. Wochenschr.*, 1876, vol. xxvi. p. 456), which I have previously referred to, stands by itself.

The movements appeared soon after birth (how soon is not stated) in an eight-months' child, which weighed only three pounds. They affected the muscles of the head and face, including those of the eyes, the neck, the trunk, and extremities. The tongue was occasionally protruded and again sharply drawn back. They ceased at the end of the second month of the child's life, and did not recur. Small doses of chloral hydrate were given by way of treatment. It may be that these movements were a result of the great want of development of the child, and that they were a continuation of the ordinary intrauterine fœtal movements, as McCann has suggested. ("On Chorea Gravidarum," *Transactions of the Obstetrical Society of London*, November 4, 1891.) But the case remains a unique one, and is certainly the nearest approach to a true case of "congenital chorea" that I have met with in the literature of the subject. Whether the movements were actually congenital or began shortly after birth, is left a little doubtful, the title of the paperbeing "A Case of Congenital Chorea," whilst the text says that at the time of the birth nothing abnormal was noted, and that the movements began soon afterward.

In conclusion, I venture to think that an attentive examination of these abstracts of recorded cases will show that the existence of true "congenital chorea" is extremely doubtful; or has, at all events, not yet been established.

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SYPHILITIC LESIONS OF THE HEART.

By H. P. Loomis, M.D.,
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Although as early as 1851 Ricord first called the attention of the medical profession to syphilitic lesions of the heart, but very little advance has been made in the pathology of this condition.

This fact has led me during my service of ten years as curator of Bellevue Hospital to note carefully from a large number of autopsies (1500 or more) coming under my personal observation certain pathological changes in the heart which were unquestionably of syphilitic origin, yet which failed in spite of marked symptoms to be diagnosed during life as manifestations of syphilis.

The pathological changes to which I now venture to call attention are the result of these observations.

The most easily recognized and characteristic action of syphilis upon the heart is the development of gummatous tumors in the walls of that organ. These tumors are situated almost invariably in the wall of the left ventricle, although a number of observers have seen them in the right ventricular wall; but no one, as far as I can ascertain, has seen them in the wall of the auricle. Of eight cases of gumma of the heart reported by Lancereaux, in only two was the wall of the right ventricle affected.

The tumors coming under my observation varied in size from a bean up to a large olive. They presented themselves in two forms, the variations being due apparently to the age and stage at which the gumma was observed. They were generally of a gray or yellowish-gray color, of rather firm consistency, homogeneous structure, and with a firm, cheesy-looking centre of a lighter color than the periphery, yet differing materially from the soft, yellow, cheesy centre of a solitary tubercle.

In one of the cases the tumor observed was of a reddish or reddish-gray color, and of soft homogeneous structure. This was probably a recent gumma, in the centre of which no changes had as yet taken place. The diagnosis of this tumor was aided by finding well-marked gumma in the liver.

These tumors were not circumscribed, but their peripheral portions blended indistinctly with the surrounding muscle, between the fibres of which, under the microscope, could be seen cellular prolongations from the tumor. Once I have seen the tumors multiple, but usually they are single. The endocardium and pericardium, in close proximity to the tumors, did not appear to be necessarily involved.

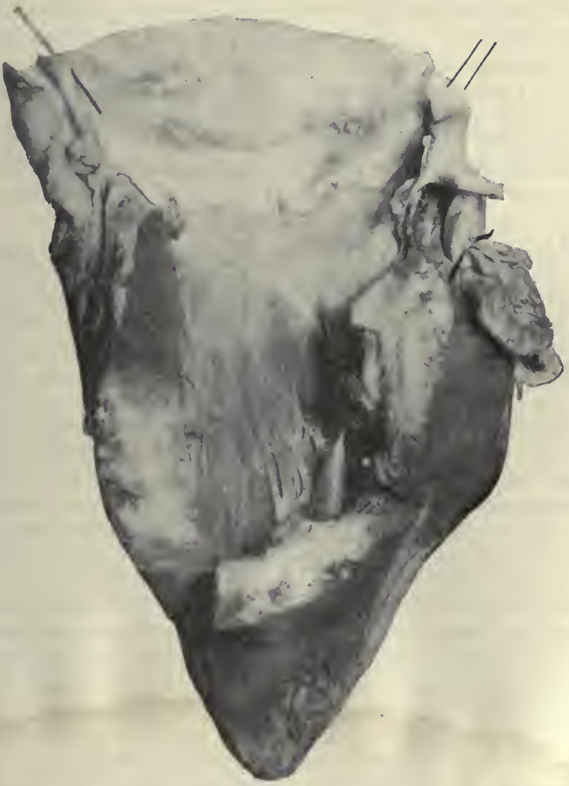
It is often extremely difficult to diagnose with the naked eye gummata found in the substance of the heart from sarcomata, solitary tubercles, or the beginnings of abscess. Recourse must be had to the microscope. The gummata, composed as they are of small cells, resemble very closely in their structure some of the sarcomata, but can be differentiated by their tendency to form large cheesy centres with amorphous membrane. They are with much greater difficulty distinguished from solitary tubercles. The absence of tubercular processes elsewhere in the body is an aid in diagnosis, but the staining of sections of the tumor for tubercle bacilli is the only method of making a positive diagnosis in certain doubtful cases. In abscess of the heart-wall there is no basement-membrane or bloodvessels between the round cells, and stained sections will generally show specific micro-organisms. Of four cases of syphilitic gumma which have come under my observation on the autopsy-table, none was diagnosed or suspected during life; three of the cases died directly or indirectly from the lesion, and two of them suddenly.

The following history of one of the most recent cases I give in full on account of the mode of death and characteristic appearances found:

At the request of the Coroner a post-mortem examination was made on W. J., aged thirty-five years, who died under the following circumstances: He was found dead on the floor of his bedroom by the servant who came to awake him in the morning. A friend, in whose room he had spent the previous evening, testified that he had left him about eleven o'clock, apparently as well as ever, although, on being questioned, he recalled the fact that he had complained of a distress over his heart two or three times while they were together. The man must have died immediately upon reaching his bedroom, for he was found stretched on the floor with his hat grasped in his hand. Careful inquiry was made of his friends, who stated that he had not been ill in years, nor had he even complained of feeling unwell during the month before his death. They had noticed, however, that in coming up stairs he was a little short of breath. He had attended regularly to business. He was a moderate drinker, only at rare intervals indulging to excess.

Autopsy made twelve hours after body was found.

The man was of strong, robust, and muscular physique, and weighed about 175 pounds. No marks of external injury were found. The liver and kidneys showed the lesions of an extreme, passive congestion, with a moderate cirrhosis of the former organ. A most careful examination of all other organs, including the brain, failed to reveal the slightest abnormality until the heart was opened. Here a lesion was found. A circumscribed tumor of a yellowish-white color, firm consistency, non-capsulated, was found imbedded in the anterior wall of the left ventricle. Its dimensions were $\frac{3}{4}$ x $1\frac{1}{4}$ x 2, over one-third of the wall of the left ventricle being involved. Neither the endocardium nor the pericardium over the tumor was thickened. The heart weighed sixteen ounces. The left ventricle was very much dilated, and as a result there was marked insufficiency of the mitral valve. There was no hypertrophy of the heart-wall. The valves were normal. The endocardium unaffected. A large, soft, red, non-adherent blood-clot filled the cavity of the left ventricle. The right ventricle was full of blood, slightly dilated, and its wall somewhat thickened. Coronary arteries were normal. The thoracic and abdominal aorta showed the lesion of an extensive aortitis involving the greater portion of its inner coat.



Syphilitic heart.

Microscopical appearance. A section, cut so as to include the heart-wall and the greater portion of the tumor, showed the following microscopical structure: It was composed of small, round cells, with here and there near the centre cheesy spots. In a few places giant cells could be seen, as also amorphous basement-substance between the round cells. In places young connective-tissue formations could be seen. The tumor was moderately supplied with small bloodvessels in its outer portion. It was not encapsulated. The round cells could be seen running in between the muscle-fibres in its external zone. Sections of the tumor were stained for tubercle bacilli with negative results. Grams's method failed to reveal the presence of any micro-organisms.

From a careful examination of all portions of the tumor an unqualified diagnosis of a syphilitic gumma was made. This case is of interest, as the tumor was the indirect cause of the man's sudden death, which must be explained by sudden overdistention of the left ventricle, and its inability to empty itself. Nearly one-half of the muscle-fibres of the left ventricular wall were destroyed by the new growth.

Case II. was that of a young prostitute, who had contracted syphilis three years before admittance to the hospital. She presented the appearance of one suffering from advanced cardiac disease. There were intense dyspnœa, puffiness of the face, blueness of the surface and extremities, with marked evidence of cardiac failure. The patient died of asphyxia twenty-four hours after admittance. A small tumor occupied the anterior wall of the right ventricle, the muscle-fibre of which had been entirely transformed. The ventricle was markedly dilated and its walls thin. A microscopical examination of the tumor showed it to be a gumma.

Case III. was that of a young woman, twenty years of age, a prostitute, who gave the following history: She had borne three children and had had two miscarriages. She had contracted syphilis as nearly as could be ascertained about two years before she came under observation. She entered the hospital suffering from lobar pneumonia, having had a chill four days before admittance. The heart-sounds appeared normal; the pulse very rapid and feeble. She had no swelling of her feet or legs, although this condition had always been present during her pregnancies. Patient died on the third day after entering the hospital. On autopsy the entire right lung was found to be in the third stage of lobar pneumonia. The liver was normal, the spleen greatly enlarged, and the kidneys presented the lesions of a moderate chronic diffuse nephritis. Pyosalpinx and purulent oöphoritis were present, and on the cervix uteri was seen a large ulceration which presented a syphilitic appearance. The heart was normal in size. No change was evident in its cavities or in the valves. A few small atheromatous patches were noticed in the aorta just above the valves. Two tumors the size of a French olive were imbedded in the wall of the left ventricle near the auriculo-ventricular septum; one an inch below the aortic valve, the other below and about an inch from the apex. The tumors were circumscribed, of a whitish-yellow color, and hard consistency. A section of one of the tumors under the microscope showed that the centre was in a condition of coagulatory necrosis, and that the peripheral zone was made up of round cells, between which was seen a basement-substance. The round cells extended for a short distance beyond the apparent edge of the tumor, in between the muscle-fibres.

Besides the formation of gummatous tumors, syphilis gives rise to an indurated myocarditis, an affection which in its later stage is hardly distinguishable by its characteristics from fibroid disease due to other causes. It has only been possible to infer the origin of these new growths by the antecedent history of the individual; by the presence of constitutional syphilis, especially gummatous tumors in other situations. It seems probable, as has been suggested by Ziegler, that this form of inflammatory induration as a consequence of congenital or acquired syphilis is much more common than the development of gummata. I believe that as our knowledge of syphilitic manifestations in the heart becomes more perfect, syphilis will be recognized as an important etiological factor in the production of this by no means rare condition, and many patients with what is now diagnosed as chronic heart disease will apparently recover under an antisyphilitic treatment.

In the cases which have come under my observation the fibroid patches were found principally in the wall of the left ventricle, although a few have been in the wall of the right ventricle. The walls of the heart were almost invariably hypertrophied and the cavities dilated, and where the clinical history was known the death had been slow and apparently due to cardiac exhaustion. It is most probable that the masses of fibrous tissue often found in the substance of the myocardium, and not accompanied by thickening of the ends or pericardium, are syphilitic in origin just as we see the systemic muscles liable to syphilitic inflammation. This syphilitic myocarditis probably originates as an affection of the muscle-arteries in the heart-wall. We must not lose sight of these fibroid areas being the result of infarctions due to changes in the coronary artery.

Fibroid induration of the heart, which is undoubtedly of syphilitic origin, presents three appearances:

1. As a well-defined fibroid area from which the muscle-fibres have almost entirely disappeared. These areas vary generally from ¼ to ½ inch in diameter; are localized, and ordinarily have no connection with the endocardium or pericardium, being situated in the substance of the heart. Appearances similar to these and due to syphilis I have seen in other muscles, especially in the leg and forearm.

2. In well-marked syphilitic cases irregular patches of new fibrous tissue are seen in the wall of the heart. Sometimes these are very diffuse, and often the serous membrane over them is thickened and puckered. These appearances do not differ very much microscopically from fibroid myocarditis due to other conditions, although on careful examination the minute arteries in the heart-wall almost invariably show the evidences of obliterating endocarditis. A similar condition due to syphilis has also shown itself in the muscles of the limbs, and a diagnosis from the symptoms has been made of progressive muscular atrophy, which, however, has rapidly been recovered from under iodide.

3. There appears to be an interstitial myocarditis of syphilitic origin, the appearance, no doubt, being due to the partial absorption of the syphilitic gumma where the outer zone has developed into fibrous tissue and the caseous centre remaining as a fibrous mass.

In looking over the history book of autopsies I find fifteen cases of fibroid myocarditis which have come under my personal observation, and, where the diagnosis has been made by microscopical examination, three of them were beyond all doubt of syphilitic origin, and presented in sections taken from different places in the heart-wall the appearances above described.

The following is the history of one of the cases:

CASE IV.—George M., aged thirty-six years, was admitted to Bellevue Hospital sixteen hours before death. He was in a comatose condition upon admission, and no history of the case could be obtained.

Autopsy made twenty-four hours after death. A number of gummatous tumors were found throughout the substance of the liver; the largest one the size of an egg. There were the evidences of healed ulcers of the leg, probably syphilitic. The heart was of normal size; the cavity of the left ventricle very much dilated, its wall about half the normal thickness, and of pale-yellow color. The mitral valve was insufficient, but there was no lesion of its orifice; the aortic valve, the aorta, and a number of the small arteries, including those of the brain, which were examined, were found normal. The kidneys, both on gross and microscopical examination, were normal. Microscopical sections taken from different parts of the wall of the left ventricle showed quite extensive areas of new connective tissue formations scattered pretty generally throughout the heart-wall, but more marked nearer the apex. The areas were diffused, the new connective tissue spreading in between the muscle-fibres. They did not appear to surround any nodules, which would suggest their development from the outer zone of old gummata. The amount of connective tissue was as great as any I have ever seen in "old fibroid hearts."

An examination of the head showed that the man had died directly from a fracture of the base, received most probably in a street brawl.

The condition of the heart in this case, taken in connection with the gummata found in the liver, and the absence of renal, general, arterial or valvular disease, can only be accounted for by considering it to be of syphilitic origin. I have always regretted that some of the systemic muscles were not examined microscopically in this case.

I have seen but one case of amyloid degeneration of the heart, and that occurred where extensive amyloid changes were found in both the liver and kidneys. The amyloid material was found between the muscle-fibres of the heart, which had become compressed in places and destroyed. The infiltration occurred principally in the intermuscular connective tissue. The same change was found in the walls of the small arteries.

Lancereaux mentions two cases of waxy degeneration of the heart due to syphilis, and speaks of the amyloid material as being found in the primitive muscle-fibres, a condition I was unable to observe in the case referred to.

Gummatous tumors, fibroid induration, and amyloid infiltration are the only changes which I have personally observed in the walls of the heart and which are undoubtedly due to syphilis. Some observers recognized an endarteritis in the vessels of the myocardium without any other change being found in the heart. They claim that this condition often induces infarctions, and that some of the small white nodules that have been observed in the cardiac walls are of syphilitic origin. Personally, I have never seen this condition.

The following table, based upon my own cases and a study of the cases of others, illustrates the different ways in which syphilis affects the heart:

Syphilitic Lesions of the Heart.

I. Gummata . .	1. Recent: soft, reddish or grayish masses. 2. Old: dry, yellow, cheesy nodules.
II. Fibroid induration	Localized: well-defined masses, large size. Diffused: accompanied by inflammation of arteries. Intermediate form: outer zone of gumma develops into fibrous tissue, cheesy centre, remains as fibroid mass.
III. Amyloid degeneration.	
IV. Endarteritis obliterans, often inducing infarctions.	

From an analysis of the cases personally observed, from a study of all cases reported by other observers of syphilitic tumors in the heart-wall to which I have had access, I consider the following as the symptoms most constantly present:

When symptoms of cardiac failure occur during the prime of life for which no cause can be ascertained, such as rheumatic history, valvular disease, arterial changes, or kidney complications, especially in one with a syphilitic history, these should always suggest syphilis as the cause of the condition.

Dyspnœa, distressing palpitation, præcordial uneasiness, syncopal attacks, a feeble and rapid pulse are features observed in most of the cases. The symptoms of the interstitial forms are such as would pertain to any disturbance in the function of the muscular tissue of the heart; so, where a syphilitic patient has suffered for a long time from irregularity of the heart's action, severe palpitation, and interference with the systemic circulation, the possibility that this condition may be due to syphilis should never be lost sight of. A rapid improvement in the patient and the amelioration of the cardiac symptoms which will quickly follow an antisyphilitic treatment, are important factors in arriving at a positive diagnosis of syphilis of the heart.

Patients suffering from changes in the heart due to syphilis either die suddenly with few if any symptoms directly traceable to faulty heart-action or succumb apparently from syphilitic marasmus, with all the symptoms of a slowly increasing cardiac failure.

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ACUTE PANCREATITIS—PARAPANCREATIC ABSCESS—DISSEMINATED FAT-NECROSIS.[1]

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W. D., aged thirty-four years, married, piano-polisher.

Family history. Father died of "old age," at seventy-eight years; mother died of "dropsy;" six brothers and four sisters living; one brother died at the age of thirty-seven of apoplexy; no history of tuberculosis in any branch of family.

Personal history. As a child had chicken-pox; pneumonia at the age of six years; has been married thirteen years; has had no children. For years he has been a regular drinker of beer and whiskey; he usually takes a drink of whiskey in the morning before breakfast; sometimes more in the day; smokes and chews tobacco. Five years ago the patient states that he was overcome by heat. He was in bed a week, and unconscious at times during that period. Ever since this attack he has had, at times, peculiar "scary spells," a nervous dread of some impending disaster. For about two years he has been subject to nausea in the morning; at times he vomits a greenish, slimy substance. Frequently he vomits his breakfast on account of this feeling of nausea. For the last year and a half the patient has had several attacks of very severe cramp-like pain in the abdomen. The pains are localized in the median line, across the epigastrium and about the umbilicus. The first attack came on at night, and was very severe. The pains are relieved only by morphine, which has been administered in large doses. After the sleep following the relief given by morphine, the patient is free from pain, but with each attack he has generally remained away from work and in the house for from several days to a week. He thinks he has had fever with these attacks, which are also often associated with vomiting. He has had, in all, three or four paroxysms of this nature. The attacks have never been associated with jaundice.

On Friday, the 15th of June, 1895, the patient came home from work on account of a slight sensation of heaviness in the epigastrium and an anxious feeling which he had noticed before to precede the attacks of pain. On Friday night the pain became very severe, and was associated with vomiting. The pain was intense and continuous, and a swelling was noticed just above the umbilicus, in the area of greatest tenderness. There was constipation. During the next week the patient was in bed; at times he was delirious; there was continuous fever; a diagnosis of abscess of the liver was made by his physician.

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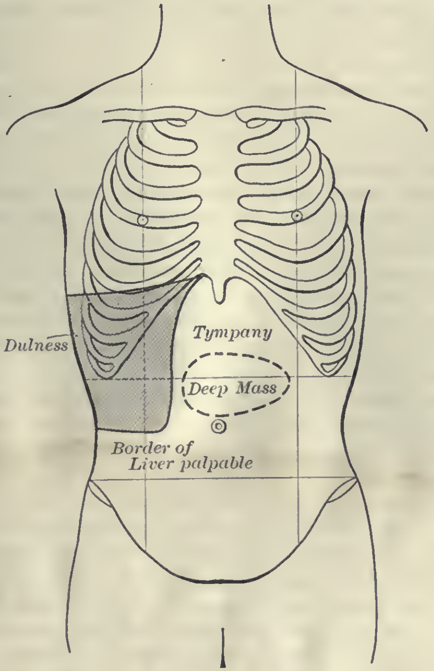
[1] Read before the Johns Hopkins Hospital Medical Society, Jan. 7, 1895.

On June 25th the patient was admitted to the Johns Hopkins Hospital, operation having been advised. He was admitted to the surgical department of Professor Halsted, Dr. J. M. T. Finney in charge. To the courtesy of Professor Halsted and Dr. Finney I owe the opportunity of examining and following this case.

I saw the patient shortly after his entry, and made the following note: "On physical examination the patient is a well-formed man, quite corpulent; lips and mucous membranes of good color. The tongue is coated, the temperature elevated; the mental condition dull; the patient is a little confused. Examination of the *thorax* is negative. On inspection the *abdomen* is full, showing a rather undue prominence in the median line across the epigastrium. Hepatic flatness begins at the sixth rib in the mammillary line, while in the same line the lower border of the liver can, apparently, be felt about on a level with the umbilicus; it is not, however, very distinct, owing to the tension of the abdominal muscles. Liver-flatness is coextensive with this area. Passing toward the median line the resonance becomes tympanitic. Just below the xiphoid cartilage the resonance is loudly tympanitic, and from the sensation conveyed by palpation there is evidently an air-containing organ (stomach?) just below the skin. Below, between this and the umbilicus, at the point of maximum prominence, is to be felt a deeply-seated mass, over which there is well-marked tympany. The outline of the mass



is indistinct. It is not tender on ordinary palpation. To the right this mass is not to be sharply separated from what would appear to be the liver; to the left it reaches about to the costal region. Pressure over the lower left ribs does not cause pain. In the knee-elbow position nothing further is to be made out. *Splenic* dulness is about normal in area, and does not pass the costo-articular line. There are no glandular enlargements." The appended chart, made at the time of this examination, shows the position of the deep mass, of the hepatic dulness, and the epigastric tympany.

The *urine* was free from albumin or sugar.

The *blood* showed a leucocytosis.

From the fever and general condition of the patient it was believed that there was an acute intraperitoneal inflammatory process. Though the mass was not distinctly fluctuating, it gave, on palpation, the impression that it contained fluid, and the diagnosis lay between an hepatic abscess, an abscess resulting from perforation of the stomach or intestine, and an acute inflammatory process, starting, probably, from the pancreas. While no sharp separation could be made out between the deep mass and the liver, the absence of motion on deep inspiration, the sharp outline of the hepatic dulness, the loss of the lower border of the liver, which was to be made out on palpation to the right of the mass, as well as the entire absence of jaundice, made the presence of an hepatic abscess improbable. A fecal abscess was not to be definitely ruled out, though the situation was certainly unusual. There was nothing in the history of the case to suggest the existence of a perforating gastric or duodenal ulcer. Nothing pointed to implication of the gall-bladder. On the other hand, the situation of the mass, which was deep, was exactly that of the pancreas. The history of the case was, also, not unlike that in other cases of acute pancreatitis which have been reported. The patient was a fat man, with a somewhat alcoholic history. There had been several sharp attacks of pain, localized quite definitely in the pancreatic area, associated with fever, vomiting, and collapse. That the mass might be a pancreatic cyst, or a cyst of the lesser omentum, appeared improbable, owing to the suddenness of the appearance of the tumor, to the inflammatory nature of which the fever and general symptoms strongly pointed.

The diagnosis, then, of acute pancreatitis with disseminated fat-necrosis, and possible sequestration of the pancreas, was made, and an exploratory operation advised.

The operation was performed under ether, on June 27th, by Dr. Finney. An incision was made in the median line above the umbilicus. On opening the peritoneal cavity the large right lobe of the liver was found on the right, much as indicated by the dulness upon the chart. In the median line, adjoining the liver and stomach, a mass of adherent fatty tissue was found, which was filled with numerous discrete and confluent small, opaque, yellowish-white nodules, presenting the characteristic appearance of disseminated fat-necrosis. This mass of tissue was adherent to the stomach and to the liver. Involved in the adhesions over the lower part of the opening passed the transverse colon. The general abdominal cavity was packed off with gauze, and an opening was left for future drainage.

For the next several days the temperature remained somewhat elevated, but the general condition of the patient was fairly good.

On July 3d, on dressing the wound, the tumor-mass was found to have diminished considerably in size.

On the 5th and 6th of July the patient was restless, nauseated, and, at times, delirious. On the evening of the latter date a small coil of intestine was expelled, on coughing, from the lower end of the wound; it was returned without subsequent trouble.

At 10 P.M. on the 7th an examination was made by Dr. Halsted. The examining finger opened, in the upper angle of the wound, a large cavity containing thick, brownish-yellow pus and large masses and shreds of necrotic fat. The finger passed far backward at the bottom of the wound into what appeared to be a cavity in the pancreas. The main excavation represented, evidently, the lesser peritoneal cavity. A drainage-tube was placed in the wound, which continued to discharge. Several days later the wound presented an interesting appearance. Across the middle of the incision stretched the transverse colon, which presented a raw and granulating surface, while above this an opening extended into the large cavity, discharging creamy pus and large masses of necrotic fatty tissue. The cavity was drained freely, and slowly granulated and contracted, while the general condition of the patient improved greatly.

The patient left the hospital on the 23d of September, feeling quite well. The wound at this time was entirely closed excepting for a small sinus, which was two inches deep and one and a half inches in diameter.

The discharge from the cavity on the day after the opening was made showed pus-corpuscles, bacteria in great quantities, numerous fatty acid crystals, with large and small masses of necrotic fat. Cultures were, unfortunately, not made, the opening occurring unexpectedly. No tissue which could be identified as pancreatic was found in the discharge. Some of the detritus discharged from the wound was placed in alcohol and hardened, while sections were examined under the microscope. These masses proved to consist simply of necrotic fatty tissue. Several small pieces of the fat found at the first operation were removed and sent to the pathological laboratory, to Dr. Barker, who made the following report: "The naked eye shows here and there in the tissue opaque white areas which are entirely different in appearance from the rest of the fat. They remind one of particles of tallow; they are slightly grayish and inclined to be granular. Under a low power one observes masses which tend toward a spherical shape, though they are often irregular in outline, with a peculiar yellowish tint. Some of the masses appear more or less homogeneous, showing fissures, transverse or radiating from the centre, not unlike the appearance of hyaline muscle in infectious diseases. Other masses of similar size are seen under the high-power to consist of myriads of short acicular crystals arranged usually more or less irregularly, sometimes radially placed. There are many single crystals and bundles of crystals, resulting evidently from the breaking up of these masses. Some of the large, apparently homogeneous bodies show within them what appear to be large radiating crystals, resembling the so-called margarine crystals. In addition to these there are numerous small masses, the substance of which, in its homogeneous appearance, resembles much that of the larger homogeneous bodies.

"On application of heat, after mixing the mass with salt-solution, the homogeneous bodies become flatter, sometimes fuse, and show still more the appearance of hyaline muscle.

"On heating the tissue with cold glacial acetic acid the crystals and masses are rapidly transformed into fat-droplets. Each single crystal can be watched changing into a fat-droplet. Many of them which meet one another fuse. There is a marked activity in the masses with an almost immediate transformation of the substance into minute fat-droplets. These remain separate for a while, but later fuse, especially if the cover-glass be pressed. There is a rapid appearance of fat-drops at the edge, with violent streaming movements. Toward the centre the action is very slow and the acicular crystals become at first much more distinct. Both the crystals and the homogeneous substance dissolve.

"On treating with hot glacial acetic acid there is a rapid transformation into fat-globules. In sections the same process takes place, large, clear spaces of fat being seen in the transparent tissue.

"The masses do not dissolve in absolute alcohol nor in ether.

"20 per cent. hydrochloric acid in 70 per cent. alcohol acts as does cold glacial acetic acid, though rather more rapidly. Pure hydrochloric acid produces, also, the same changes.

"10 per cent. caustic potash, hot or cold, produces no marked change.

"Oxalic acid alone has no special influence, but, after treating the nodules of fat-necrosis with glacial acetic acid, the subsequent addition of oxalic acid gives an immediate white precipitate, while later typical crystals of calcic oxalate may be made out microscopically."

These observations confirm entirely the views of Langerhans,[1] who demonstrated that these fat-necroses consisted of a combination of lime with fatty acids.

Cultures on slant agar from the necrotic areas and from the adjacent tissues were negative. Cultures made at the operating-table from similar areas were also negative.

The operation, then, revealed a deep-seated abscess occupying the lesser peritoneal cavity, arising apparently from the pancreas. This was associated with extensive disseminated fat-necrosis.

Acute inflammatory affections of the pancreas have occupied considerable attention during the last five years, since the appearance of Dr. Fitz's Middleton-Goldsmith Lectures on Acute Pancreatitis.[2] Fitz collected from his own cases and literature fifty-four examples of acute pancreatitis, where satisfactory accounts of the cases were given, as well as sixteen cases of extensive hemorrhage from the region of the pancreas. From careful analysis of these cases he concluded that acute inflammation of the pancreas was a "well-characterized disease," one which could and should be more often recognized. He divided these cases into three main classes: (1) *suppurative pancreatitis*; (2) *hemorrhagic pancreatitis*; and (3) *gangrenous pancreatitis.*

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[1] Verhandl. d. x. Internat. med. Cong., Bd. ii. abth. iii. p. 144, Berlin, 1891, 8vo., and Virchow's Archiv, Bd. 122, p. 252, 1890.

[2] Acute Pancreatitis, Boston, 1889, 8vo Also Bost. Med. and Surg. Journal, v. xxi. pp. 181, 205, 227, 1889.

(1) In *suppurative pancreatitis* there exists an acute purulent inflammation of a smaller or larger part of the pancreas.

(2) In *hemorrhagic pancreatitis* the process consists of an acute cellular or fibrino-cellular infiltration of the connective tissue of the organ with a more or less extensive necrosis of the lobules. This inflammatory process is associated with numerous diffuse hemorrhages throughout the organ; these may sometimes be quite extensive; these cases are not to be confused with those instances of extensive apoplectiform hemorrhage which are not so uncommon in the pancreatic region.

(3) The *gangrenous pancreatitis* appears in many cases to be an after-result of an attack of acute hemorrhagic pancreatitis. Here the peritoneal covering of the pancreas may be destroyed, while large or small portions of the organ may be sequestrated. Perforation into neighboring organs may occur, and discharge of the necrotic pancreas by the rectum has been noted in two instances.

Disseminated fat-necrosis was noted in nearly half of the cases of hemorrhagic and gangrenous pancreatitis; it was less commonly seen in the suppurative forms.

Clinically the symptoms presented by these cases formed quite a striking picture, consisting usually of[1] "sudden, severe, often intense, epigastric pain, without obvious cause, in most instances followed by nausea, vomiting, sensitiveness, and tympanitic swelling of the epigastrium. There are prostration, often extreme, frequent collapse, low fever, and a feeble pulse. Obstinate constipation for several days is the rule, but diarrhœa sometimes occurs. If the case does not end fatally in the course of a few days, recovery is possible, or a recurrence of the symptoms in a milder form takes place, and the characteristics of subacute peritonitis are developed." The cases of hemorrhagic pancreatitis are usually very acute and often fatal within a few days. When the process is not immediately fatal it may last a little longer, going on possibly to sequestration and gangrene. The cases of suppurative inflammation of the pancreas may, in some instances, last for weeks or months.

The differential diagnosis, according to Fitz, lies "between an irritant poison, perforation of the digestive or biliary tract, and acute intestinal obstruction."

Since the appearance of this paper a considerable number of cases of acute pancreatitis have been reported by Dr. Fitz[2] himself and by other authors. The study of the literature shows that most of the cases would fall under Fitz's headings of hemorrhagic or gangrenous pancreatitis, where this case also probably belongs, the extensive parapancreatic abscess being probably a secondary process. A case which was very similar to that above reported was noted by Walsh.[1] Here a similar abscess was found and successfully drained. The symptoms had been of six months' duration, consisting of "sharp burning pains in the epigastric region and tenderness on pressure." The physical examination showed "an area of dulness extending from the ensiform cartilage half way to the umbilicus and reaching to the left costal area."

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[1] Loc. cit., p. 89.

[2] Trans. Assoc. Amer. Phys., 1890, p. 191, and Bost. Med. and Surg. Journal, vol. cxxvii. p. 573.

The cause of these inflammatory processes is not by any means entirely clear. Fitz[2] believes that they are due in most instances to infectious agents entering through the pancreatic duct. The presence of biliary or pancreatic calculi seems to be somewhat favorable to their development.

One of the most interesting points, however, in connection with these cases of acute pancreatitis is the frequent association of the condition which was first described by Balser[3] as disseminated fat-necrosis. The very common association of fat-necroses with acute pancreatitis naturally suggests that there is some close relation between the two processes, and the views as to the nature of these fat-necroses and as to their association with acute pancreatitis it may not be uninteresting to summarize. Balser believed these areas to be due to an excessive growth of fatty tissue, which destroyed the tissue which it surrounded, the central portions of fat becoming necrotic from lack of nutrition. He found these areas of fat-necrosis in the interlobular fat in a number of bodies where no special symptoms had been present during life. The changes in the pancreas he believed to be secondary.

Chiari[4] was unable to find any evidence of this overgrowth of fatty tissue and regarded the process as degenerative, the result simply a condition of general marasmus.

Fitz[5] is inclined to believe in two varieties of fat-necrosis; first, a simple "necrobiotic" fat-necrosis, which has, he believes, no direct relation to severe pancreatic lesions; and secondly, an inflammatory fat-necrosis, which he believes to be generally secondary to an acute inflammation of the gland. This process may be extensive and lead to sequestration of the organ. The fat-necroses are not the cause of the hemorrhages in hemorrhagic pancreatitis. The hemorrhages result from the infectious process, which is also the cause of the necrosis. The inflammatory nature of these areas, Fitz believes, is suggested by the round-celled infiltration which one always finds about their periphery, and by the fact that microscopically he has, in several cases, demonstrated the presence of bacteria in or about the affected spots.

Langerhans[6] in two interesting communications demonstrated that the substance of these necrotic areas consisted in a combination of certain lime salts with fatty acids. These observations Prof. Welch has been able to confirm in a number of instances. The observations of Dr. Barker in this case were also wholly confirmatory of these views. Later Langerhans[1] makes the interesting suggestion that the process may possibly result from the action of the fat-splitting ferment from the pancreas upon the surrounding fat-tissue, the fatty acids entering afterward into combination with lime. He asserts that in one instance he has been able to produce similar changes in the subcutaneous fat of a dog by the injection of an extract of the pancreas.[2]

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[1] Medical News, Phila., Dec. 1893, p. 737.

[2] Trans. Assoc. American Phys., 1890.

[3] Virch. Archiv, Bd. 90, S. 520, 1882.

[4] Prager med. Woch., 1893, No. 30, S. 285, and No. 31, S. 299.

[5] Acute Pancreatitis, Boston, 1889, 8vo.

[6] Loc. cit.

Rolleston[3] suggests that they are rather due to some trophic influence exerted by the abdominal sympathetic system, which is very probably affected in most of these instances by the extension of some morbid process from the pancreas.

Balser[4] in 1892 made a preliminary communication in which he stated that in certain areas of fat-necrosis in hogs he had found numbers of fine rod-like bodies collected often into aster-like masses. These rods were somewhat thickened at one end, resembling the "clubs" of actinomycosis. From their staining-reactions he believed that they were not crystals but bacteria.

Culture-experiments, though unfinished, showed growths of a short rod-like bacterium. No further communication on the subject has, however, appeared.

Prof. Welch[5] in 1891 obtained the bacillus coli communis in pure culture from areas of fat-necrosis associated with acute hemorrhagic pancreatitis. There was, however, a general colon infection following extensive intestinal ulceration, and it is explicitly stated in Dr. Welch's note that he is of the opinion that the fat-necroses were not the result of a primary colon infection. It was more probable, in his opinion, that the organisms gaining entrance into the system through the intestinal ulceration reached these areas which already existed. In a number of other instances since then culture-experiments by Prof. Welch have remained entirely without result.

The true cause, then, of these fat-necroses is not entirely settled. No one to-day believes in the original views of Balser with regard to the overgrowth of fatty tissue.

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[1] Festschrift R. Virchow, Berlin, 1891.

[2] Hildebrand recently experimented by tying the pancreatic duct in cats, and in other cases introducing pieces of pancreas into the abdominal cavities of other animals. He asserts that wherever the tissues were exposed to the action of pancreatic juice, alterations resulted which were identical to the fat-necroses observed in man. His experiments led him to believe that these changes are due to the fat-splitting ferment, not to trypsine. La Semaine Médicale, April, 1895, p. 193.

[3] Trans. Path. Soc., London, 1893.

[4] Verhandl. d. xi. Cong. f. Innere Med., Wiesbaden, 1892, p. 451.

[5] Medical News, 1891, v. lix. p. 669.

Rolleston's idea is ingenious, but purely speculative.

It is an undoubted fact, as pointed out by Balser, that fat-necroses may be found in a very considerable number of instances in the interlobular pancreatic fat of individuals who have shown no symptoms pointing to the process during life. These observations have been frequently confirmed in the pathological institute of this university. It is also undoubtedly true that in many of these instances there is no gross evidence of pancreatic disease, while in the great majority of the cases there is nothing to suggest that the condition is purely necrobiotic or marantic. In a like manner it is difficult to account for these necroses by the assumption that they are of infectious origin, particularly in that cultures have so often proved entirely sterile. Especially suggestive is the fact that even in cases associated with marked pancreatitis of undoubted infectious nature cultures have also been sterile. The exact etiological relation of disseminated fat-necrosis to pancreatic disease is not, then, by any means settled. That the process may occur without evidence of pancreatic disease is undoubted. In these instances, however, the areas are almost always limited to the interlobular fat-tissue of the pancreas. On the other hand, it is very probable that the great majority of cases of acute pancreatitis are associated with this process, a proportion probably much larger than indicated by the cases originally collected by Fitz.

The writer has had the good fortune to observe, in the past six years, six cases of acute pancreatitis at autopsy and one at operation. Four of these cases he has been able to follow clinically. In six of these seven instances the process was associated with disseminated fat-necrosis. The only instance in which this association was not present was a case of a small abscess in the pancreas involving an area no larger than a walnut. Here the symptoms produced were not referable to the pancreas, but to complete biliary obstruction caused by implication of the common duct, This case was reported by Dr. Fitz in 1890.[1]

While, as has been said, the relation of disseminated fat-necrosis to acute pancreatitis is not definitely settled, the researches of Langerhans are certainly very suggestive. The process seems in almost all instances to take its origin from the region of the pancreas. The affected areas are usually quite sterile. It has, apparently, been shown that exactly similar changes may be produced by the action of pancreatic juice upon fatty tissue. In the great majority of instances of acute pancreatitis these areas are present. The pancreatic affection would seem in these instances to be certainly infectious in origin, while the individual areas of fat-necrosis are sterile. In view of these facts one can but recognize the possibility that the sequence of events may be, as suggested by

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[1] Trans. Assoc. Amer. Phys., 1890.

Langerhans, a primary lesion of the pancreas which offers the opportunity for the escape of the fat-splitting ferment from the organ into the surrounding tissue, and secondary disseminated fat-necrosis, which is inflammatory only in its remote origin; this, by its extension and progress, may lead to most serious results (sequestration, gangrene of the pancreas, parapancreatic suppuration). In this particular instance it is probable that the primary process, whether in the pancreas or in the fatty tissue, was of some duration, as testified to by the several attacks from which the patient had suffered during the past two years. Clinically the case is of considerable interest in showing the possibility and importance of early diagnosis and operation in certain cases of acute pancreatitis. It is, I believe, the second case reported in literature in which a correct diagnosis of acute pancreatitis has been made—the first in which the diagnosis has been followed by a successful operation. That recovery may occur where the process has been most extensive has been shown by the cases of Trafoyer[1] and Chiari,[2] where large portions of the necrotic pancreas were passed by the rectum. This, however, is an outcome which we can expect in but a small proportion of the cases. The great majority, if not fatal during the first few days, would lead probably to a fatal general peritonitis. It is probable, then, that in a certain number of instances where the process is not acutely fatal, and yet is followed by extensive suppuration or sloughing, timely operation may, as in this case, save the life of the patient.

[Since this article was written two very similar cases have been reported, in each of which an ante-mortem diagnosis was made.

In the first case, reported by Körte (*Semaine Médicale*, April, 1895, p. 193), operation and drainage were followed by temporary relief. The patient died, however, eight days later.

In the second case, reported by Atkinson, an operation was not attempted (*Journ. of the Amer. Med. Assoc.*, 1895, xxiv. p. 999).

Cutler (*Boston Med. and Surg. Journal*, 1895, cxxxii. 354) reports also two cases of acute hemorrhagic pancreatitis, in one of which an ante-mortem diagnosis was made.]

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[1] Wiener med. Woch., 1880, xxx. 139, 164.

[2] Ibid. p. 142

THE ALLEGED REFLEX CAUSES OF NERVOUS DISEASE.

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IF Sir Thomas Browne were to return to this world, he might add to a new edition of the *Pseudodoxia Epidemica* an interesting chapter on reflex neuroses. He could begin by recalling the opinions which obtained in his own day concerning the causes of melancholy—which, by the way, seem to have served the same useful purpose of a term to conceal diagnostic ignorance that debility does to-day—how "There is almost no part of the body which, being distempered, doth not cause this malady, as the brain and his parts, heart, liver, spleen, stomach, matrix, or womb, pylorus, myrach, mesentery, hypochondries, meseraic veins." He would, of course, mention the ascription of acute anterior poliomyelitis to teething, of paraplegia to disease of the urinary organs, and of spastic paraplegia to phimosis, and he could hardly fail to note the remarkable nervous symptoms still grudgingly attributed to intestinal worms. In his own day, however, scientific skeptic as he was, he testified as an expert before Sir Matthew Hale, that he was "clearly of opinion that the persons [on trial] were bewitched," so that it would be too early to expect him to hold that the opinion that ascribes various neuroses to eyestrain or even to pelvic disease was false.

In order definitely to determine whether the doctrine of reflex neurosis is one which can be accepted, we must first define it. It may be fairly stated, I think, in this way: A slight change occurs in some organ, not sufficient to attract particular attention to the organ itself, to interfere materially with its functions, or to cause noticeable pain or discomfort in it. This change irritates the terminal sensory nerves of the affected organ, and the irritation is communicated to connecting fibres of the ganglionic or spinal nerves, and thus conveyed to a distant organ which may be anatomically healthy. This irritation may excite in the distant organ phenomena which simulate a morbid condition in it, the organ responding "most violently to this slight abnormity, as the alarm-gong sounds in answer to the tap on the button of the distant station."[2]

This doctrine, in former times, received very much support from the cases of nervous disorder—epilepsy, insanity, etc.—which were supposed to be due to pelvic disease, and were promptly cured by treatment of the pelvic disorder after all other methods of treatment had failed. We

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[1] Read before the Philadelphia Neurological Society, January 28, 1895.

[2] Engelmann: The hystero-neuroses. Mann's System of Gynæcology, ii. 59.

have all of us heard how the gynecologist has seen "an agonizing asthma cease shortly after the placing of a pessary, intense cardiac pains and insomnia vanish upon the insertion of a tampon, and a single application of electricity cause a violent dyspnœa, with great nervous depression, to disappear, even during the application, whilst the patient was still upon the table, though haunted by suffering and reduced to invalidism for over two years. . . . Even violent psychoses, such as mania, melancholia and epilepsy, will disappear completely upon relief of the uterine lesion."[1]

Few of us, however, have met with such cases in our own practice, and they seem to be growing much rarer. In my own experience I do not recall a case where the nervous condition was materially benefited by treatment of the pelvic organs unless there were definite local symptoms of pelvic disease; and even with actual local disease the treatment of the nervous conditions may greatly relieve the local symptoms.

It is not in accordance with the good Anglo-Saxon spirit of fair play to kick a man when he is down, so that it is not necessary to say very much of the "meddlesome gynecology" which has done so much harm in the past. When in the discussion before the Association of American Physicians in 1891, where the neurological side was so ably sustained by your President, Dr. Lusk could say that he was "tempted to assert that the performance of normal ovariotomy for epilepsy and insanity is to be regarded as hardly better than malpractice," we may conclude that that operation is following the course of the "star of empire," and is seldom performed in our Eastern cities. The admirable pleading of the late Dr. Goodell, too, has done much to teach the gynecologist that a woman has "some organs outside of the pelvis," and yet we still see the evil effects of a constant tinkering at the pelvic organs by men who ignore the rest of the body. It is within a very short time that a young girl came under my care, who had always been weak and neurotic, and who had broken down nervously from anxiety concerning an invalid mother, over-study and over-excitement, and an entire neglect of the necessity of rest. Just at the beginning of her breaking down slight leucorrhœa, without any other special pelvic symptoms, led her physician to ignore all the important elements in the causation of her trouble and to suggest a vaginal examination. A "moral rape" was perpetrated, absolutely nothing abnormal was found in the pelvis, but the mental shock was most disastrous, and added greatly to the length of her illness. "Es ist eine alte Geschichte," but the moral of it has not yet been learned by the profession at large.

There are, of course, cases where the anæmia caused by extreme menorrhagia, the toxins absorbed from gonococcal infection or malignant disease, or the exhaustion which may follow the severe pains of dysmenorrhœa may give rise secondarily to nervous disease; but such cases are outside of the limits of our definition, and need not be discussed.

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[1] Engelmann. Loc. cit., p. 80.

There are many reasons why this doctrine of reflex neuroses, now, so far as pelvic diseases go, decadent, should have won favor. If, in an obstinate case of nervous exhaustion or hysteria, or in a grave case of epilepsy or melancholia, we could find a cause for all the trouble in a slight lesion of a distant organ, and, by curing or removing that lesion, cure the nervous trouble, it would certainly be worth the attempt. Such a cure, too, would speak loudly for the acumen of the physician who exercises it, and naturally every physician would gladly win such fame; so that, when a new source for a reflex neurosis is advocated, we find a host of men, who know less than they ought of nervous diseases, ready to attribute all the affections which they cannot explain to this cause.

One reason for the persistence of this doctrine is the failure of the physician to comprehend the various morbid conditions manifested in hysteria and neurasthenia. There are many women, and not a few men, who are always in a state of unstable nervous equilibrium. They have, perhaps, a scanty supply of nervous force, which enables them to get through an ordinary day without any great difficulty; but they have no reserve of force. Any trifling accident, menstruation, coryza, a spoonful too much of salad, a cup of coffee, an unfortunate investment, a quarrel with the cook, or an unbecoming bonnet, will lead to a temporary nervous bankruptcy which excites some sort of a nervous storm—indigestion, insomnia, neuralgia, a fit of the blues, or an hysterical outburst. Not recognizing their own weak condition, the trouble is referred to the immediate exciting cause, which in their own minds, and often in the mind of the physician, is thus brought into undeserved prominence. An example of this is shown in certain cases of epilepsy, where, as was very clearly shown by Herter and Smith,[1] the individual attacks often coincide with increased gastro-intestinal putrefaction and constipation. It can hardly be assumed that such intestinal disturbances are peculiar to epileptics, so that another factor must also be considered, and that is, of course, the defective brain of the epileptic which can be so easily disturbed by such processes.

Again, the study of hysteria shows us that it is not uncommon to find in the hysterical certain painful points. These points are often situated over the ovaries, to be sure; but they are also frequently found elsewhere: over certain vertebræ, in the epigastrium, beneath the breasts, under the clavicles, or somewhere in the head. We know that the tenderness is purely of psychical origin, that it may occur without any reference to the condition of the organ which lies beneath the tender spot, or which may seem tender itself. Sometimes these tender spots are hysterogenous, and pressure on them may give rise to an hysterical attack. Sometimes the morbid psychical condition may directly affect certain remote organs, and we have hysterical aphonia, hysterical vomiting, or hysterical anuria. Careful study will show in such cases that the whole trouble is purely psychical, and that under hypnotic influences the organ can perform its functions normally. The characteristic of such patients is their profound suggestibility. Either by their own or by another's suggestion, some idea assumes a dominating place in their consciousness, or, perhaps unknown to them, in their subconsciousness, and the morbid psychical processes thus set in motion give rise to many very strange and remarkable symptoms. We know only too well how the "indiscreet youth" are led by the quacks to develop a long series of "imaginary" but none the less real and distressing sexual symptoms, which may be most difficult to cure. The sexual element plays a most important part in the psychical life of woman, which need not be dwelt upon here, so that the idea of "womb trouble" is fraught with every form of evil and disaster, and a woman finds plenty of evidence, not only from the "astringent smile" of her friend "for health," but from eminent medical authority, that all her vapors and megrims can be explained by this dreaded disorder. The suggestion of pelvic treatment may for a time relieve all these ills, and, in certain hysterical conditions, a tent, a tampon, an application, or a pessary may work wonders. The still more tremendous suggestion of a surgical operation can do still more, and an incision of the skin of the abdomen, or normal ovariotomy, may, for a time, work a startling cure.

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[1] New York Medical Journal, Aug. and Sept. 1892.

Such cures, as I have said, are not always permanent, and here, as elsewhere, the argument *post hoc, ergo propter hoc* often leads to false conclusions. Many chronic affections, notably tabes and epilepsy, may do well for a time under any new form of treatment, and the whole history of the treatment of epilepsy is filled with the story of the abandonment of therapeutic measures which at first had warm advocates. Castration, trephining (in non-traumatic cases), ligature of the vertebrals, nitrate of silver, and zinc, in the treatment of epilepsy, are like the last year's snow. A young woman with a very neurotic history was referred to me some time ago by an oculist. He clearly recognized the neuropathic element in her trouble, but as she suffered greatly from headache, which had been much aggravated by using her eyes in the study of music, he thought it fair to test the ocular conditions. He found anisometropia, and glasses gave striking relief for a month; then the trouble returned, and again he examined the eyes and corrected the errors anew. This again gave relief for a time. So the story went on for two years. The actual condition of the eyes and their muscles did not seem constant, but he worked with the utmost skill and patience to remove every element of eyestrain. Each attempt met with less and less success, until finally the girl fell back into her old condition.

In all these cases the trouble is something more than a misplaced womb or a diverted nasal septum, or half a dioptre of hypermetropia, or an exophoria. It is the bad brain beneath, the neuropathic state indicative of more or less degeneracy. That, however, is a truth which is not pleasant for the physician to tell or for the patient to hear. We know how eager the patient and his friends are to have some cause outside of himself assigned to his trouble. A fall in childhood, eyestrain, masturbation, the effects of some infectious disease—anything is better than to face the fact that the patient is degenerate, and that his trouble is due to the degeneracy of his ancestors. The doctrine of a reflex neurosis is much more popular—it is hard to own to a bad brain. "Daher man es viel besser ertragen kann, sein Missgeschick, als sein Ungeschick deutlich ins Auge zu fassen."

There is, however, a real condition which gives the hypothesis of reflex neurosis a certain support, and that is the condition of referred pain. It has long been known that disease in a certain part might give rise to pain in a somewhat distant part of the body, as when hip disease causes pain apparently in the knee. This can hardly be called a true reflex in every case, for it is often due to a mistaken interpretation of the sensations which reach the brain, just as when the man who has had his hand amputated still thinks that he feels his fingers. Dana,[1] some years ago, pointed out some of the more important relations of these referred pains. His researches have since been confirmed by Heads,[2] who has made an elaborate and exhaustive study of all the forms of referred pain and tenderness, and has done much to put our knowledge of the subject upon an accurate foundation. It seems probable, however, that this reference of pain and tenderness always follows a certain definite course, being governed by the anatomical relations of the parts. Thus, the referred pain of hip disease, already spoken of, is always ascribed to the knee, and never to the sacrum or pubes. Head has found that the referred pain and tenderness in disease of the stomach are ascribed to the skin area supplied by the sixth, seventh, eighth, and ninth dorsal segments, which also send motor fibres to the stomach. In diseases of many of the viscera there may also be referred pain and tenderness in certain areas of the head, these areas being probably in anatomical connection with the organs by means of the fifth nerve and its nucleus and the nucleus of the pneumogastric. It is obvious that if the local disease be cured by the appropriate treatment, the referred pain and tenderness will cease; and also that if the local disease be neglected, the referred pain and tenderness will continue; and that, secondarily, they may cause phenomena of exhaustion, with their consequent nervous symptoms. It is necessary, therefore, carefully to examine every individual case in order to determine if there be a local source for any referred pain; but it is probable, even in the light of our present knowledge, that, given the location of such pain, we can draw fairly accurate conclusions as to its source. Pain in the knee in a child, for instance, instantly suggests hip disease. Occipital pain may well suggest ovarian disease, while if occipital pain be absent and the pain be frontal, we may, according to Head's rules, infer that the ovaries are not responsible. In such cases, however, we have to do only with referred pain and tenderness, and not with any other nervous phenomena.

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[1] New York Medical Journal, July 23, 30, 1887.

[2] Brain, 1893-1894, xvi. 1; xvii. 339.

Granting that the hypothesis of reflex neuroses, as stated in the beginning of this paper, be sound, there are certain very remarkable peculiarities which remain to be explained. Why, for example, should disease of the ovary cause so much more nervous trouble, and so much oftener demand removal of the organ on account of the nervous trouble, than disease of the testicle, which has similar anatomical nervous relations? Why should an inflammation of the mucous membrane of the cervix uteri cause so much more nervous disturbance than a gleet? Why is the whole notion of reflex neuroses from uterine disease to-day decadent, while the doctrine of reflex neuroses from eyestrain is dominant? Why are the reflex neuroses from diseases of the nose coming into prominence, while the reflex neuroses from diseases of the larynx are seldom mentioned? Why do we so seldom hear of reflex nervous troubles from diseases of the joints? In all these cases there is equal reason to suppose an irritation of terminal sensory nerves, and in all these cases there is a communication between these nerves and other ganglionic or spinal nerves which can convey the irritation to a distant organ.

I have just spoken of the doctrine of reflex neuroses from eyestrain. As the subject, especially since the work of Stevens, has attracted much attention in this country, although comparatively little abroad, it may be well to consider it briefly.

Given a moderate error of refraction in the form of hypermetropia or astigmatism, or given insufficiency of some of the external muscles of the eye, it may be compensated by unusual effort of the muscles of accommodation or of the external muscle at fault. This unusual effort gives rise to the ordinary result of any unusual muscular effort—fatigue, a heavy feeling, and pain. Weir Mitchell long ago pointed out the influence of errors of refraction in causing headache, and cases of headache from this cause are met with daily by all of us. Like most neurologists, I have made it almost a routine practice to refer all patients with obstinate headache to an oculist, and often with satisfactory results. Unfortunately, however, even when an error of refraction or a muscular insufficiency is present, the treatment of the ocular condition does not inevitably lead to a cure, and I have more than once had to regret my rash promise of relief after I had urged a pretty woman to wear the obnoxious glasses. Cases such as I have just cited, where every form of ocular treatment gave only temporary benefit, have not been unique in my experience, and it has sometimes happened, even where there was astigmatism or hypermetropia, that ocular treatment did no good at all. A young woman of twenty-five years began to have severe pain in the vertex and right side of the head after an attack of pleurisy with effusion, for which she was tapped. The pain was dull and heavy, and she had a marked sense of pressure in the vertex, as if something were moving there and causing stagnation. She slept poorly and was nervous and despondent, and her memory was poor. The vision was blurred, and there was considerable sweating of the head. She consulted a neurologist, who at once referred her to an oculist, who found a slight astigmatism and gave her the proper glasses. Near work, however, had never brought on or exaggerated the pain, and the glasses did no good.

Such cases have led me to the belief that only when the pain was distinctly over the eyes, and was brought on or exaggerated by accommodation for near objects, and where there was no neurotic history, could a reasonable promise be given that glasses would relieve the headache. These headaches from errors of refraction, in other words, are nothing more than cases of referred pain. Head has defined the region of pain and tenderness more exactly as lying in the midorbital region, and he also adds that the pain comes on as soon as the patient wakes in the morning, and is relieved by complete paralysis of the accommodation by atropine.

In a few cases of blepharospasm and habit-spasm affecting the muscles about the eye a correction of errors of refraction has given marked relief; in other cases, however, such correction has been of no avail. In most cases where there has been relief, in my experiences, there has been a marked neurotic condition, and the trouble may have been of hysterical origin. It is possible, however, that with the extreme muscular effort at accommodation there may have been an overflow of nervous energy to the neighboring muscles.

Stevens, however, and various writers since, have urged that eyestrain from errors of refraction was of much importance in the production of epilepsy, chorea, and other nervous affections. For a year I referred every case of chorea to an oculist, who corrected all errors that required it. In a few cases the ocular treatment relieved the headache, but it had no perceptible effect on the chorea. I may add that I had no belief that treatment of the eyes would cure the chorea, but I referred them to the oculist at his request. To attribute a disease of limited duration, occurring chiefly in neurotic children, and coming on most frequently in the spring, often attended with fever, endocarditis, and arthritis, and probably of infectious origin—to attribute such a disease as this to a permanent cause like eyestrain—seems absurd.

Epilepsy, much more than chorea, is one of the diseases which rests most distinctly upon a neurotic basis. It is, in fact, an indication of pretty profound degeneracy. The recent work of Chaslin, Van Gieson, and others indicates very strongly that it has a definite anatomical basis in processes of neuroglia-sclerosis in the brain-cortex. In spite of the benefit which is alleged by Dodd, Ranney, and others, to follow treatment of the ocular conditions, it is asking too much to suppose that the degeneracy or the cortical changes are the result of astigmatism or any form of phoria.

It is probable that these errors of refraction upon which so much stress has been laid are very common in healthy persons, so that, unless it can be proved that they are much more common in nervous patients, their importance in the causation of nervous troubles is diminished. Concerning the frequency of hypermetropia and astigmatism there seems to be much difference of opinion. Ohlemann[1] found only 9 per cent. of hypermetropia in 293 gymnasium students at Minden, while Roosa[2] claims that the normal eye is becoming hypermetropic, and, in one hundred persons without asthenopia he found[3] only five who were wholly free from astigmatism. Hypermetropia, especially in children, seems, according to most observers, to be very common. There is some reason for believing astigmatism is commoner in epileptics. Dodd,[4] who in fifty healthy persons found 70 per cent. of hypermetropia and 16 per cent. of astigmatism, found in one hundred epileptics only 42 per cent. of hypermetropia and 42 per cent. of astigmatism. Féré and Vignes[5] found astigmatism in 112 out of 142 epileptics.

Granting this fact, however, it by no means follows that the astigmatism has any etiological influence on epilepsy. In epilepsy, as in other forms of nervous disease of degenerate type, various stigmata of degeneracy—cranial asymmetry, malformations of the ear, torus palatinus, anomalies of the genitals, etc.—are common. Astigmatism may itself be such a stigma, and the fact that in epileptics Féré has found astigmatism most marked on the same side as other physical deformities is certainly suggestive.

There is a class of cases, however, where a reflex origin seems fairly probable—the cases of so-called reflex epilepsy. A critical examination of the cases reported under this head would certainly eliminate many of them. A considerable number of them are undoubtedly cases of hysteria, and in others the dependence of the epilepsy upon the alleged source of irritation is certainly doubtful. Nevertheless the thesis that a remote irritation may give rise to convulsive seizures is supported by the well-known experiments of Brown-Séquard, producing epilepsy in the guinea-pig by injury of the sciatic, and by a limited number of authentic cases in man. In most of these cases the source of the epilepsy has been of traumatic origin, and on removal of the irritation the epilepsy has ceased. These cases, however, are distinctly rare. In the cases of epilepsy coming under my own observation, I think that less than 2 per cent. could be assigned to such a cause. One case is worth citing, although the patient was not long enough under observation for a complete report. A healthy Irishwoman, a multipara, had a difficult labor in which forceps were used. It was supposed that the forceps injured the sciatic nerve, as symptoms of lesion of the left sciatic soon developed. She came to the Boston City Hospital, where she remained for some weeks, suffering from sciatic pain, and slight anæsthesia, paresis, and degenerative reaction in the muscles in the region supplied by that nerve. After several months she returned, with some improvement in the sciatic symptoms, but complaining of loss of memory, mental dulness, general muscular weakness and slight tremor, and she reported several convulsive seizures. No special hysterical stigmata were found, but no opportunity occurred of seeing the attacks, and she failed to continue in attendance at the hospital.

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[1] Archiv f. Augenheilk., January, 1893.

[2] American Ophthalmol. and Otol., Oct. 1892.

[3] New York Medical Record, Nov. 26, 1892.

[4] Brain, 1893, xvi.

[5] Féré: Les Épilepsies et les Épileptiques, p. 393.

In these cases it is possible that the constant irritation of the sensory nerves, associated, perhaps, with the shock of an injury, may finally result in a motor discharge, giving rise to a pure reflex epilepsy. Such cases, however, are rare, and further investigation is necessary.

The following conclusions seem justified:

1. The essential feature in the production of many neuroses is the neuropathic state—the degeneracy of the subject.

2. In hysterical subjects suggestion plays an important part both in the development and in the cure of the symptoms.

3. Disease of any organ may give rise to referred pain in some definite area, but not to other nervous disturbances, except as a secondary result of local disease of the organ. This local disease manifests itself by the ordinary local symptoms, and the nervous phenomena are due to exhaustion, anæmia, intoxications, etc.

4. In a few rare cases injury of a sensory nerve may give rise to epileptiform seizures.

5. Surgical operations for the relief of nervous symptoms should never be performed unless there are clear indications, apart from such symptoms, for an operation.

A REPORT OF FOURTEEN CASES OF DISLOCATION OF THE ULNAR NERVE AT THE ELBOW.[1]

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The following case of dislocation of the ulnar nerve at the elbow recently came under my observation, and I have thought it of sufficient interest to bring it to the notice of the members of this Association. I have also been able to find a report of thirteen additional cases of this injury, which I have reported briefly.

Case I.—John L., aged fifteen years, in March, 1894, while playing with another boy, was struck upon the inner aspect of the right elbow by the point of a stick of wood, about an inch in diameter and eighteen inches in length, which was thrown at him with some force. Upon the reception of the blow he felt a sharp pain at the seat of injury, and noticed a sense of tingling in the inner side of the forearm and in the little and ring-fingers; he described the sensation as that caused by the passage of a current of electricity. There was some swelling about the elbow-joint, which was treated by lotions for a short time, and a few days after the injury he presented himself at the Surgical Dispensary of the Methodist Hospital, complaining of pain and tingling in the forearm and fingers, and a certain amount of disability of the arm. He was seen at this time by Dr. Laffer, who, upon examination of the injured arm, discovered a cord in front of the inner condyle, pressure upon which caused, pain and tingling in the little and ring-fingers. Dr. Laffer considered the case one of dislocation of the ulnar nerve, and pushed the nerve back into its normal position, and placed a compress back of the internal condyle over the ulnar nerve, and held it in place by adhesive strips, and limited the motion of the elbow-joint by the application of a splint. The patient was referred to me a short time afterward, at which time he was still wearing the compress over the internal condyle of the humerus, but had discarded the splint. Upon examination of the arm at this time I noticed when the forearm was flexed I could distinctly feel a cord slip over the inner condyle and take a position in front of it; when the cord occupied this position he complained of a sense of numbness and tingling in the little and ring-fingers; when the forearm was extended the cord could be felt to slip backward and take its position behind the condyle; pressure upon the cord when replaced produced somewhat the same sensations in the fingers. The patient stated that the sensations produced by displacement of the cord, which was evidently the ulnar nerve, were much less marked than soon after the injury. It was also noticed that the ulnar nerve upon the injured side was more prominent in its groove behind the condyle than that of the opposite side. I saw the patient again two months later, and on examination it was found that the nerve still slipped forward when the forearm was flexed, but the patient stated that he had been able to resume his work, and it was only occasionally that there was any numbness or tingling following the displacement of the nerve. When the patient first came under my observation the question of cutting down upon the ulnar nerve and suturing it in its normal position was suggested; but as the discomfort was slight, and he was soon able to regain the use of his arm, his parents refused to have him submit to operative treatment.

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[1] Read before the American Surgical Association, New York, May 30, 1895.

From the gradual loss of sensations produced by the displacement of the nerve, and the increased usefulness of the arm, it would seem that the nerve had accustomed itself to its changed relations.

CASE II.—Dr. Lutz[1] reports a case of dislocation of the ulnar nerve in which there was no history of traumatism. The patient referred to by Dr. Lutz was a man of twenty-eight years of age, who was continuously employed in lifting a heavy bucket from a lower to a higher level, in doing which he often noticed that the little and ring-fingers of the left arm became suddenly numb and stiff, and that these symptoms disappeared when he rubbed his elbow against his body. Dr. Lutz upon examination of this case found a cord in front of the inner condyle of the humerus, which, when pushed back of the condyle, caused the disappearance of all of these symptoms. It was ascertained that the patient could easily reproduce the displacement of the ulnar nerve in making the motions of the arm which he employed in his customary work.

CASE III.—G. Andral[2] reports the case of a patient who was struck by a piece of wood upon the inner side of the right elbow, which became discolored, swollen, and painful; there were loss of sensation in the ulnar distribution of the forearm and hand, and inability to extend the fifth finger. The arm was placed at rest by the application of a plaster-of-Paris bandage, which was retained for twenty-eight days. Three months after the injury it was found that the ulnar nerve glided forward from the groove in which it rested when the arm was flexed, and took a position over the prominence of the internal condyle, but returned to its normal position when the arm was extended. There were wasting and sensory and motor changes also present. Andral excised two to three centimetres of the nerve, and the two ends were drawn together and sutured, and the arm was fixed in the extended position. The operation was unsuccessful as regards securing the nerve in its normal position, but the function of the nerve was restored.

CASE IV.—A. Blattman,[3] of Zurich, reports the case of a man who, while swinging violently to and fro on a bar, felt something snap at his elbow, which was followed by pain from the elbow to the fingers. Two months after the accident he still suffered from pain, and it was found that the ulnar nerve had been dislocated.

CASE V.—Annequin[4] reports the case of a soldier who fell from a parallel bar and struck on his forearm in the antero-internal part of his elbow. Paresis of sensation and motion followed, the ulnar nerve was found dislocated, and was replaced and held in position by a pad placed over the inner condyle, and the arm was immobilized with a plaster-of-Paris cast. In twenty days sensation and motion had returned almost entirely. At the end of twenty-seven days the cast was removed, and when the arm was rapidly flexed the nerve slipped out of place. The nerve was then exposed by incision, two flaps of the fasciæ were formed, and the nerve was sutured in its groove. The cure in this case was definite.

CASE VI.—Prof. Poncet,[5] of Lyon, reports the case of a boy, fifteen years of age, who sustained an injury in throwing a snowball, who, every time his arm was flexed, had the ulnar nerve slip out of its sulcus and take a position internal to the internal condyle of the humerus. In this case Poncet exposed the nerve, and having made two fibrous flaps from the walls of the sulcus between the olecranon and the internal condyle of the humerus, enclosed the ulnar nerve by suturing the edges of the flaps. The patient was seen many months later and the dislocation had not returned.

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[1] St. Louis Medical and Surgical Journal, 1880, p. 550.

[2] Inaugural Dissertation, G. Andral, 1889, Griefswald.

[3] Ibid.

[4] Archives de Médecine et de Pharmacie Militaire, 1890, vol. v. p. 452.

[5] Semaine Méd., 1880, vol. i. p. 93.

CASE VII.—E. Zuckerkandl[1] describes a case of dislocation of the ulnar nerve in which every time the right elbow was flexed the ulnar nerve slipped from its sulcus to the flexor side of the condyle, and returned again to its normal position when the arm was extended. No cause was known in this case.

CASE VIII.—Schilling[2] reports the case of a male, aged seventy years, who complained since his youth of occasional pain in the distribution of the ulnar nerve, strength of fourth and fifth fingers deficient, moderate wasting in the district supplied by the ulnar nerve, most marked in the interossei muscles, motility and sensibility unaffected, no history of injury in this case; the ulnar nerve could be felt upon the top of the internal condyle, and slipped backward into its groove behind the condyle when the area was extended. No treatment was instituted in this case.

CASE IX.—Sir William MacCormick[3] reports the case of C. McG., aged thirty years, who noticed gradual loss of power in the right forearm. Five months before he came under observation he noticed something slip forward on the inner side of the right elbow. On examination it was found that the ulnar nerve on the right side slipped in front of the condyle as soon as flexion of the forearm took place; this produced no pain, but a feeling of uselessness in the forearm, and inability to hold anything in the fingers for any considerable time. MacCormick exposed the nerve, and having made a bed for the nerve, by dividing the fibrous structure behind the inner condyle, he fixed it in its usual position by means of two kangaroo-tendon loops passed through the inner margin of the triceps tendon and somewhat loosely around the nerve; several sutures were also used to unite the divided margin to the fascial expansion of the triceps superficial and the nerve, which were then firmly supported; the arm was put up in the extended position in a plaster-of-Paris splint. The patient left the hospital with the nerve in its normal position and the function of the nerve entirely restored.

CASE X.—Mr. Croft[4] reports the case of E. M., aged twenty-eight years, who fell, striking her right elbow against the edge of a bucket; the injury was followed by cellulitis confined to the region of the right elbow. She was admitted to the St. Thomas Hospital twelve days after the injury. An abscess was opened above the elbow, and she left the hospital well at the end of a week. She was readmitted to the hospital later, and on examination it was found that when the forearm was flexed to a right-angle the ulnar nerve slipped forward from its position behind the condyle, and the patient experienced pain in its distribution. Mr. Croft exposed the nerve, which was slightly thickened and freely movable over the inner condyle of the humerus; he then stitched the sheath of the nerve to the inner margin of the triceps tendon, and finally attached the edge of the same to the periosteum covering the inner condyle, leaving the nerve completely imbedded. The wound was closed and the arm was fixed in a plaster-of-Paris splint in the extended position. Sensation was almost absent from the fourth and fifth fingers, but gradually returned. The patient left the hospital with the nerve in position.

CASE XI.—G. H. R. Holden[5] reports the case of a double dislocation of the ulnar nerves at the elbow. The patient was a mate upon a schooner, who was at the wheel during a storm, and who was compelled to use all of his strength to keep the vessel on her course; during a squall he suddenly felt something give way in both of his elbows, and since that time (two years ago) he has been conscious of pain and tingling along the course of the distribution of the ulnar nerves. Examination showed both ulnar nerves were dislocated forward, but as the patient did not experience much discomfort no operative treatment was recommended.

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[1] Medizinische Jahrbucher, Wien, 1880, p. 135.

[2] Munchner medicinische Wochenschrift, 1892, p. 679.

[3] London Lancet, 1891, p. 1041.

[4] London Lancet, 1891, p. 1040.

[5] British Med. Journal, 1893, vol. i. p. 288.

Case XII.—W. F. Tronson[1] reports the case of a man who fell upon his left elbow several years before. Upon examination he found that the ulnar nerve, instead of being behind the inner condyle, occupied a position over its prominence, and the slightest pressure upon it caused tingling in the fingers supplied by this nerve. No treatment was employed in this case.

Case XIII.—H. W. Cunningham[2] reports the case of Mrs. G., who, a year before she was seen by Mr. Cunningham, stumbled in going downstairs and struck her elbow forcibly against the wall, since which time pressure brought to bear over the inner condyle of the humerus gave rise to pain and tingling along the inner side of the forearm and little and ring fingers. Examination showed that the ulnar nerve was displaced forward on the most prominent part of the condyle, and pressure upon it produced pain in the forearm and fingers corresponding to the distribution of this nerve. No treatment was employed.

Case XIV.—G. Monroe Smith[3] reports the case of C. S., who slipped while running around the corner and fell violently upon his elbow. The arm was painful and swollen for a few days, and when seen at this time the ulnar nerve could be felt as a cord over the internal condyle of the humerus. It could be easily reduced by extension of the forearm and manipulation, and an attempt was made to keep it in place by extension and by strapping. This treatment failing, an incision was made over the nerve, and it was exposed, and fastened in its place by sutures, which stretched across it from the neighboring fasciæ over the triceps muscle, a little above the inner condyle. An angular splint was worn for a couple of weeks, and the nerve has since remained in position.

Dislocation of the ulnar nerve at the elbow is a comparatively rare affection, occurring independently of fractures or dislocations of the bones of the elbow, and may result from direct violence, or from muscular effort or violent flexion of the arm at the elbow, causing laceration of the fascia which holds the nerve in its groove at the back of the inner condyle of the humerus. Zuckerkandl, in an examination of two cases of dislocation of the ulnar nerve in dead subjects, noted that the internal condyle of the humerus in each of these cases was small, and the groove for the nerve shallow, and the fascia binding down the nerve was poorly developed; an unusual forward position of the internal lateral ligament was also noted. Annequin considers that rupture of some of the fibres of the internal lateral ligament is the determining cause of dislocation of the ulnar nerve at the elbow. The symptoms resulting from this injury—pain, tingling in the parts supplied by the ulnar nerve, and a certain amount of disability of the elbow—are usually more marked immediately after the injury, but the symptoms usually become less marked in a short time, in many cases very little permanent disability seems to follow, the nerve accustoming itself to its new position. Very rarely a neuritis is developed. In view of the possibility of the development of a neuritis, it seems wise to replace the dislocated nerve and fix it in its normal position as soon as possible after the injury. To accomplish this, various plans have been suggested and practised: first, fixation of the elbow by means of a splint or plaster-of-Paris bandage, with the forearm extended, will keep the nerve in place, but can only be employed for a limited time. The application of a compress over the back of the internal condyle has also been employed, in addition to the fixation by the splint. The use of a splint to fix the arm at the elbow, and a compress over the nerve, have not been satisfactory, as the dislocation has generally returned after its removal when the function of the elbow-joint is restored, but this method should be employed in any case, and should be given a fair trial, where the patient refuses a more radical form of treatment. The most satisfactory method of securing the nerve seems to be that practised by Mr. MacCormick, who exposed the ulnar nerve, and having made a bed for the nerve by dividing the fibrous structures behind the inner condyle of the humerus, fixed it in its usual position by two kangaroo-tendon loops passed through the inner margin of the triceps tendon and somewhat loosely around the nerve; several sutures were also used to unite the divided margin of the fascial expansion of the triceps tendon superficial and the nerve. In Mr. Croft's case the sheath of the nerve was sutured to the inner margin of the triceps tendon, and he finally attached the edges of the same to the periosteum covering the internal condyle of the humerus, leaving the nerve completely imbedded. Annequin and Poncet exposed the nerve, and having made two fibrous flaps from the walls of the sulcus between the olecranon and internal condyle of the humerus, enclosed the nerve by suturing the edges of the flaps; the result was satisfactory. Annequin also performed a similar operation in a second case with success, and suggested the union of the edge of the external flap to the triceps tendon. Andral, in the case of dislocation of the ulnar nerve at the elbow which was accompanied with neuritis, resected two to three centimetres of the ulnar nerve and sutured the ends; the result in this case, as regards securing the nerve in its normal position, was not satisfactory. In Zuckerkandl's case sutures were employed with success.

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[1] British Med. Journal, 1893, vol. i. p. 288.

[2] Ibid. 1893, vol. i. p. 116.

[3] Ibid. 1893, vol. i. p. 188.

As far as I can discover, in all cases where the nerve was exposed and sutured in its normal position the result was satisfactory, and the dislocation did not recur, and in no case is it recorded that neuritis developed in the nerve as a result of operative treatment.

TUMOR OF THE AQUEDUCT OF SYLVIUS.[1]

By Joseph Collins, M.D.,
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The aqueduct of Sylvius is perhaps the rarest location for tumor within the cranial cavity. The symptoms produced by a growth in such a location are, therefore, not so well known as those produced by tumor of other parts of the brain. This is my excuse for asking your attention to a few details of the following case, which was carefully observed for several weeks prior to the patient's death.

J. F., single, aged eighteen years, a plumber's assistant, was admitted to the Hospital for Nervous Diseases October 6, 1894. When first admitted he stated that his illness dated from a fall, striking the head, which he had got about six months before. He afterward confessed that this was not entirely true, and that he had not been well for two years past. There was nothing in his family history or in his childhood to call for special attention. He had been a strong baby and a vigorous boy. In school he was not considered stupid, nor did he suffer from headache. Two years ago he began to have dull, sleepy feelings, which his people attributed to laziness, so he was obliged to continue at his work. He took no interest in it, consequently made no progress, and it was with difficulty that he was able to keep his employment, although he did so until four months before coming to the hospital. During these two years he had attacks of dizziness, some headache, and occasionally weak spells, but never had he lost consciousness. He stopped working because he was not considered safe after he received the fall. The feeling of dulness, vertigo, and attacks of weakness continued, the headaches became more severe, and he was taken to a physician, who treated him for epilepsy by giving large doses of bromides. He continued to grow worse under treatment, and in July he lost control of the bladder and became uncertain and somewhat staggering in gait. About this time he had a severe epistaxis, which came on without attributable cause, and was checked only after prolonged treatment. This is all that could be learned from the patient, and to it the family could add nothing. They were positive that there is no specific or tubercular history in the family. All the other children, six in number, are healthy.

Examination October 7, 1894. The patient is a large, dull, overgrown-looking individual, with a large head and expressionless face, the latter thickly covered with acne, the result of the bromides. Two years ago he wore a 6¾ hat, now he requires 7½. If left undisturbed, he sits in one position the greater part of the time, and likes to rest his head upon the wall or the bed. He has very little interest in his surroundings, and few wishes. He understands perfectly everything that is said to him, and answers intelligently but slowly. After a question a number of seconds elapse before he begins to answer, and often while answering a peculiar involuntary "foolish" smile comes over his countenance.

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[1] Read before the New York Neurological Society, January 8, 1895.

Memory is fairly good. He is deficient in mental power and apprehension, and continuous mental exertion is beyond him. When he attempts to walk he staggers, reels, then plunges, but saves himself before falling. His gait is the characteristic inco-ordination of one very drunk. At the first examination this staggering seemed to be mostly, if not entirely, toward the left. On the following days, however, he staggered equally toward the right and left. Station sways considerably. Patellar reflexes normal, lively. Sensation unimpaired, but not very acute. Vision good, 20-20ths. Pupils react to light and accommodation.

Ophthalmoscope shows choked disks, but not very marked. No ocular paresis or paralysis. Hearing good. No defect of smell or speech. Circulation sluggish, hands and feet cold and blue; he says he cannot get thoroughly warm. Temperature continually slightly subnormal. Complains of spells of severe headache, which pass off after lasting a variable length of time, from a few minutes to a half hour, and leave a dull, constant pain all through the head. He has never had anything resembling a spasm or convulsion. Frequently passes urine in bed or in his clothing, and this seems due not so much to a paralysis of the sphincter, but to the fact that he takes no interest in responding to these calls. Has no attacks of nausea or vomiting, nor has he had previously. No loss of flesh, and he says he feels quite as strong as ever. There is no difficulty in swallowing, and no deafness.

Nine days later it is noted that the boy's mental condition and gait vary very much. Some days he is quite bright and gets about fairly well; on other days he is stupid and can hardly hold himself erect. He seems to have lost complete control of the bladder. The gait has become more uncertain and reeling. His knees bend beneath him, and his efforts remind one forcibly of an intoxicated person. No change in the condition of the optic nerve; vision remains acute.

October 23*d*. The patient is more stupid and answers with less alacrity; does not complain of soreness in the head or headache; sleeps a great deal, or at least is in a stuporous condition, from which, however, he is easily aroused, but after being aroused quickly relapses if left alone. Temperature almost continually two degrees below normal. Reflexes present but very sluggish, no disturbance of sensation.

October 29*th*. During past few days patient has been getting more stupid and more difficult to arouse. Several times he has fallen while attempting to get from his chair to the bed. November 1st patient was put to bed at seven o'clock, and the next morning he was found dead.

The notes of the autopsy, eight hours afterward, are as follows:

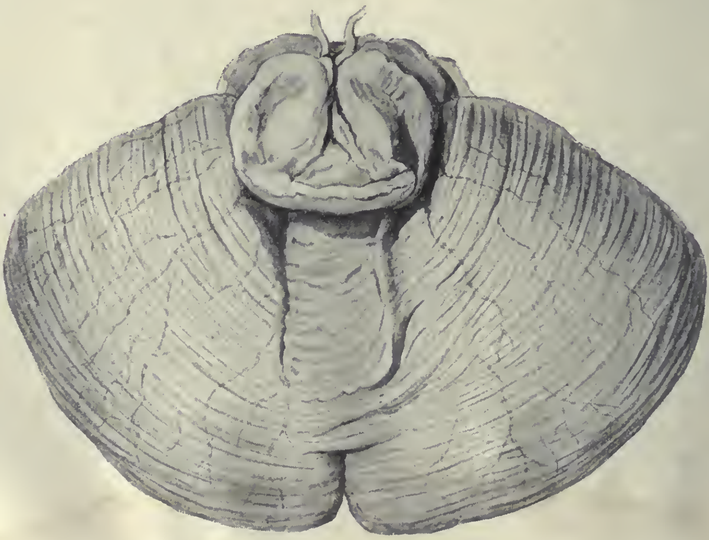
Body extremely well nourished and well developed. No traces of struggle before death, or other indications that death had not been easy. Measurements of head were as follows: Circumferences: Occipito-mental, 25¾; occipito-frontal, 25⅛. Diameters: Bifrontal (frontal eminences), 4¾; bitemporal (temporal ridges), 6⅛; bioccipital (occipital eminence), 6¼; bimastoid (mastoid foramen), 7. Distance from mastoid process of one side to mastoid process of the other across top of skull, 13¼ inches.

The head gave one the impression of being large and especially prominent over the temporal bosses. The external surface of the skull showed no sign of disease or injury. While being sawn through the skull-cap was noticed to be extremely thin. After its removal it was seen to be from one and one-half to two and one-half millimetres in thickness, thinner on the right side than on the left. The Pacchionian impressions were very deep, especially those situated near the vertex. The dura was normally adherent and showed no traces of inflammatory deposit. The cerebral veins were moderately full. The brain, when the skull-cap was taken off, gave a fluctuating impression to the finger, and in removing it from the basis cranii, when the tentorium cerebelli was cut the third ventricle was accidentally opened, and a considerable quantity of clear colored fluid escaped, probably about eight to ten ounces. After its escape the cerebral hemispheres became sunken and lost their fluctuating impression to the touch.

Weight of the brain without fluid 1474 grammes.

There were no evidences of meningitis, no inflammatory deposits in the pia or the arachnoid, no atheroma or tortuosity of the bloodvessels. The posterior interpeduncular space appeared softened. There is a free opening into the third ventricle, and the middle finger can be carried with ease into the anterior and inferior horns of the lateral ventricles, which are greatly distended. The fourth ventricle contains no fluid.

FIG. 1.



Showing location and size of tumor.

On cutting off the cerebellum, medulla, pons, and cerebral peduncles there is found a grayish translucent mass filling the aqueduct of Sylvius and projecting backward like a tongue. Its location and size are very well shown in Fig. 1, which represents the actual appearance. Anteriorly it reaches forward as far as the splenium of the corpus callosum and posterior commissure.

The walls of the third ventricle are nearly destroyed, so that the third ventricles and the lateral ventricles practically form the same cavity. The walls of the latter ventricle are smooth and show no granulations or inflammation. The ependyma is clear and translucent, and is free from granulations and roughness. The choroid plexus and velum interpositum are free from cysts or unusual adhesions. The general

FIG. 2.

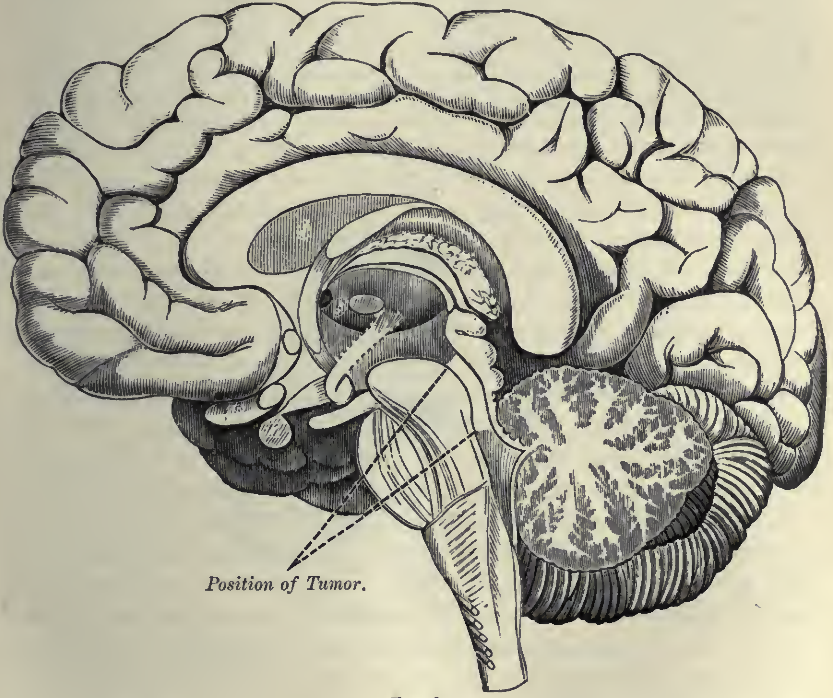
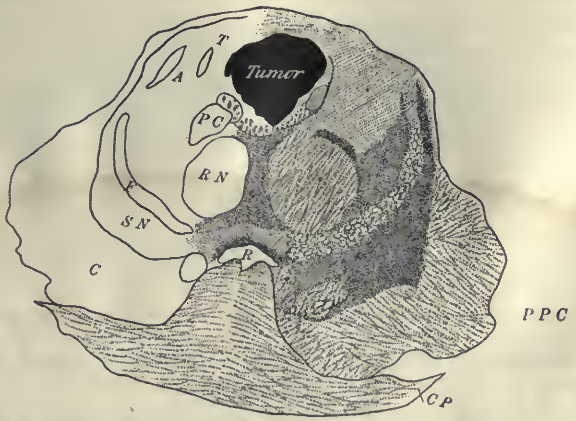


FIG. 3.

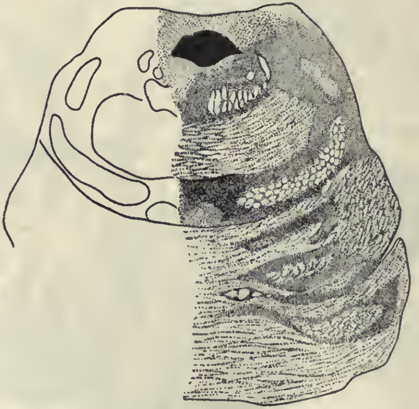


Cross-section through cerebral peduncles. From nature. ×2.
T. Trigeminus descending root. *A.* Fillet from ant. corp. quad. *P C.* Posterior commissure. *F.* Fillet. *R N.* Red nucleus. *S N.* Substantia nigra. *R.* Raphe. *P P C.* Pes pedunculis cerebri. *C P.* Crus pontis.

autopsy showed congested, slightly œdematous lungs. Heart normal, pericardium and pleura normal. Liver and kidneys normal in size and consistency. Left side an undescended testicle, old infantile hernia.

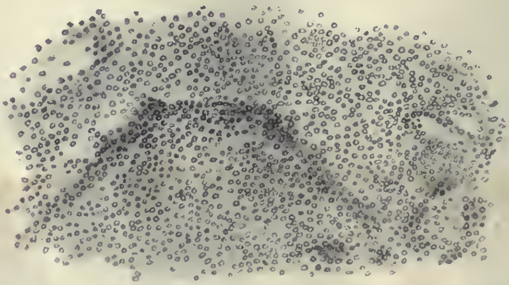
The brain was hardened in alcohol. When sections of the mid-brain and pons were made, preparatory to putting them on the blocks, it was seen that the tumor extended downward almost to the upper termination of the fourth ventricle. Below the point where it ended the aqueduct and ventricle were distended to twice or three times their natural size. Anteriorly the tumor extended to the posterior termination of the third ventricle, completely filling the distended aqueduct. The location of the tumor is well seen in Fig. 2. Figs. 3 and 4 show the appearance on section through the cerebral peduncles and pons respectively. Cultures of the tumor for tubercle bacilli were negative. Some specimens, which were stained with carmine, while others after soaking in a strong solution of potassium bichromate and stained with hæmatoxylin, are exhibited herewith (Fig. 5). Microscopical examination of the tumor shows it to be in all probability a sarcoma of the round-cell type. At first it was thought to be tuberculous by Dr. Brooks, the pathologist at the New York Post-Graduate Hospital, and his assistant, Dr. Schmitt, who were kind enough to examine the specimens for me; but the vascularity of the sections, the small amount of coagulation-necrosis, and

FIG. 4.



Cross-sections of pons, showing tumor in the aqueduct.

FIG. 5.



Microscopical appearance of a section through the middle of the tumor.

the uniformity of the round cells speak against this view. The tumor seems to have had its origin from the lining of the ventricle, and the strictness with which it confined itself to that cavity and the entire absence of any infiltration without its walls were most striking. This lack of infiltration accounted for the absence of nuclear symptoms, for if the slightest infiltration had occurred it would have manifested itself in the parts supplied by the oculomotor and patheticus nerves. Sections stained with hæmatoxylin failed to reveal any tracks of degeneration.

When we glance at the symptoms presented by this patient in the light of the post-mortem findings we see that marked inco-ordination, manifested by the reeling, staggering gait, was the result of the distention of the aqueduct. As has previously been stated, the gait was typical for what has been described as cerebellar gait. It cannot be too strongly emphasized that such a gait can result quite as well from tumor involving the corpora quadrigemina. When the lesion is in the latter region oculomotor paralysis will be always associated with inco-ordination, and if the posterior corpora quadrigemina is involved some defect of hearing up to complete deafness will be a symptom. Bechterew has shown that in animals lesion in the vicinity of the third ventricle and in the region of the inferior olive causes disturbances of motility entirely analogous to those resulting from injury to the semicircular canals and cerebellum, and that likewise lesions of certain portions of the tegmentum and the posterior cerebellar peduncles as well as section of the acusticus will result in very similar disturbances.

The subnormal temperature and circulatory sluggishness were the result of distention of the fourth ventricle, inhibiting in a degree the functions of the important centres situated along the floor of that cavity. The headache, hebetude, slow mentality, were all dependent upon the intraventricular accumulation, the result of the complete plugging of the aqueduct.

CHOICE OF METHODS IN PERFORMING HYSTERECTOMY.

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The earnest debate which the discussion of this question occasioned at the recent meeting of the American Gynecological Society in Baltimore is an indication of the importance of the subject, so that no apology is necessary in presenting it. However much prominent men differed in their views on that occasion, the method of choice seems to the writer so plainly indicated in the large majority of cases that a serious consideration of the apparently irreconcilable opinions is certain to be interesting. To elucidate properly the matter under discussion, we will consider separately hysterectomy as performed for septic conditions or for fibroid tumors. The removal of the uterus both through the abdomen and through the vagina for malignant disease, and for prolapse, is now an ancient procedure; but deliberate hysterectomy for inflammatory pelvic condition is an operation of relatively recent date. In 1886, Péan, of Paris, made his first vaginal hysterectomy on February 16th, following it up with three more uterine castrations during the same year. During the next two or three years he repeated the operation many times, and made his first report on the subject to the Academy of Medicine in July, 1890. In that communication he recommended dilatation and curettement, when the uterine mucosa alone was affected; when suppuration had invaded the adnexæ and the pelvic peritoneum he resorted, in mild cases, to simple vaginal incision; but in severe cases he advised total ablation of the uterus, and, if possible, the appendages. The most notable contribution to this subject was the masterly report of Paul Segond before the International Gynecological Congress at Brussels, in September, 1892. About this time the inefficiency of the prevailing methods of simply removing the tubes and ovaries in serious septic cases began to be recognized in America, and such men as Krug, Polk, Baldy, Prior, Baer, Eastman, and others began to remove the uterus in serious cases, but always through the abdomen.

Though I personally performed the operation in 1891, publishing my views a few months later, it is only within the last two years that the vaginal method has been used to any extent, mostly by Polk and Boldt, of New York. The success they have obtained, coupled with the publication of the later statistics of European operators, and the recent visit of Jacobs, of Brussels, who practically demonstrated his method of operating, are certain to give a great impetus to this variety of work. Already within the last year the number of men who are doing vaginal hysterectomy for pelvic septic diseases has increased tenfold, and their results have been all that could be desired, though still there are a number of operators who condemn their work. The most determined opponents of vaginal operation are gentlemen who have become skilled and experienced in the abdominal way, and who have seldom, if ever, operated from below in this variety of disease. The same cannot be said of the others, for although it is conceded that a skilful, courageous, and experienced surgeon can perform hysterectomy on all, or nearly all, abdominally, the most enthusiastic operator by the vagina willingly acknowledges his inability to eradicate many forms of disease by his favorite method. Having performed these operations a goodly number of times myself, I have endeavored to gain a proper idea of the value of each individual variety of procedure by visiting and seeing at their work different individuals who can rightly claim the privilege of being known as experts. I have seen Péan, Segond, and Jacobs operate, the latter many times by the vaginal route. In this country I have repeatedly witnessed the operations of Kelly, Baldy, Baer, Krug, Eastman, Etheridge, and many others, whose reputation and ability are proved in abdominal work. Besides this, I have been present at vaginal hysterectomies by Polk and Boldt. With the most sincere desire to be absolutely unbiased, it has become very clear to me that, though no one operation will prove most available for all cases, vaginal hysterectomy has a large and useful field in which the most satisfactory results will be obtained. Concerning statistics of mortality but little need be said, the improvement in the technique of the vaginal advocates having reduced the death-rate, as shown in their later work, to about the same as the most successful abdominal operators. Generally speaking, it must be acknowledged that if a patient can be operated upon as thoroughly, as perfectly, and as safely from below as above, the preference will lie with the former. Not to open the abdomen, not to leave an abdominal scar means much to most women, no matter what may be said to the contrary. A patient who has not had her abdomen opened, who has no scar left that she can see, will have been less profoundly shocked, will be conscious of less traumatism, will feel easier and quieter, and will in most instances be more quietly, completely, and perfectly cured. This is the observation of men who have performed large series of vaginal hysterectomies, and who at the same time frequently perform abdominal sections. Naturally, those pathological conditions that develop lowest down in the pelvis are more clearly within the province of the vaginal operator. Large masses rising high up in the abdomen, such as ovarian abscesses, and exudative tumors rising to and above the umbilicus, are removed with more difficulty and less thoroughness by the vagina. Much depends in these cases upon the skill of the operator; for in this variety of cases the operation is frequently very difficult. On theoretical grounds, the opening into and drainage through the vagina are to be deplored on account of the difficulty of proper and thorough disinfection; but practically it cannot be denied that where drainage has been established by this channel there is little tendency for the infection to travel upward into the general peritoneal cavity, even in the most acute cases. The few cases of sepsis that occurred while the operation was still in its experimental stage have almost entirely disappeared, since the value of careful packing of gauze in the pelvis beyond the ends of the forceps has been recognized. The seat of the operation is thereby almost entirely shut off from the general cavity, the stumps of the broad ligament and the instruments being really in the vagina. That very rarely a bowel may be injured, or still more rarely the bladder or ureters perforated, cannot be denied; but these accidents become more than exceptionally rare in the hands of the man who has become skilled in this class of work. An objection to vaginal hysterectomy has been stated to be the liability of leaving behind portions of infected tissue which could not be reached. Time and time again, however, have skilful surgeons been unable to remove all infected tissue in working through an abdominal incision. Even the most successful and experienced operators naturally hesitate before opening the peritoneal cavity in the presence of a large accumulation of pus in virulent septic cases accompanied by an acute febrile condition. We do not mean the closed pus-tube or the enucleable pus-sac containing a pus which has apparently but slight, if any, septic properties; we refer more particularly to the new accumulation resulting from the rupture of one of these innocent pockets which by reason of rupture and close contact with the intestine has become newly infected, this time with the streptococcus pyogenes or bacillus coli. The boldest and most radical operators are satisfied to let out its virulent contents by means of an opening in the lower abdomen or through the vaginal wall, and to await a more opportune time for a radical procedure. I will not quote from the literature upon this subject. As the surgeon operating for appendicitis is, perforce, content with evacuating the pus from a large abscess and draining, without endeavoring to remove the offending organ from its conglomerate and entangled mass, because of the risk of infecting the remainder of the peritoneal cavity, so must we in a certain limited number of cases stop short of removing the tube imbedded in a mass of uterus, omentum, intestine, and exudate. This means a long and severe illness to the patient, who by incision has had the abscess emptied, but who is not thereby cured of her disease. Even if the tubes and ovaries are removed, we frequently leave the woman with uncured sinuses discharging either through the abdominal wall or the vault of the vagina.

We must speak in stronger terms of a still more dangerous class of cases, with openings into the rectum or bladder, discharging the most foul pus through these organs at irregular intervals. The danger of abdominal operations in these cases need not be dwelt upon. It is in such cases that the French have insisted upon the propriety of removing the uterus, and if possible, the appendages, through the vagina. The operation is not easily performed, and its seeming difficulties have undoubtedly proved a great factor in preventing its adoption. Many operators have objected to it on account of the great trouble or impossibility of removing all of the diseased parts under the sight of the eye. In this regard it must be remembered that the removal of the uterus, and usually the appendages, which occupy the very centre of the diseased pelvis, affords a straight, large, and efficient channel for drainage which in almost every instance, sooner or later, completes the cure. When, as will soon happen, operators succeed repeatedly in curing cases in which laparotomy had utterly failed, their opponents will be compelled either to inquire into the merits of the new procedure or see their patients drift into the hands of these men. Some of those who most bitterly opposed the operation now freely admit that it has a place among the recognized surgical procedures. The greatest obstacle in the way of this method is undoubtedly the question of diagnosis. The laparotomist who opens the abdomen sees and palpates the diseased tubes, measures the amount of destruction, recognizes by sight and by touch the condition of the uterus, can readily pass an opinion as to the propriety of the removal of the organ; but there is a certain proportion of cases in which, before the first incision into the abdomen is made, we are absolutely positive on account of the history of the case, the symptoms, and the result of local examination, that a radical operation must be performed, and in such cases the vaginal method offers many advantages. Pozzi, who at first positively condemned this method, has published his ideas upon the indications for the operation, which he has practised with success. In the last edition of his work he states that "In certain well-determined cases of diffuse pelvic suppuration vaginal hysterectomy is sometimes superior to intervention by the abdomen." Bouilly states that "Vaginal hysterectomy has great chances of becoming the unique method in bilateral annexial incurable disease when the indications are perfect. In difficult suppuration it is the method of choice. In simple cases it is neither more grave nor more difficult than laparotomy." The operation may not be ideal in its performance. We do not make clean cuts and apply clean ligatures in a fairly clean cavity under the sight of the eye, but we see in most cases decidedly more than they who try to underrate this class of work would have it believed. A large amount of the work is done directly under the observation of the operator. The adhesions to the exudate or the intestine can almost always be loosened in plain sight. The uterine tissue can easily be recognized, and injury to the adjacent structures avoided. The superiority of this procedure in selected cases will not fail to become evident in the near future. A place is claimed for this among the recognized operations with those who appreciate the propriety of hysterectomy at all, for the following reasons:

1. In the variety of cases to which it is particularly applicable it is less dangerous than laparotomy.
2. It avoids to a great degree the contamination of the general abdominal cavity by a less disturbance of the exudate, and consequently protects the unaffected portion.
3. It produces less shock, and is therefore applicable to patients much debilitated by the existing disease.

4. It does away entirely with the abdominal scar, and therefore with the liability to hernial protrusion.

5. In common with hysterectomy by other methods, it results in a more certain, rapid, and complete cure than mere removal of the appendages.

6. It is decidedly preferable, and less dangerous in cases complicated with fecal, urinary, and vaginal fistulous tracts.

7. It has proved successful in many cases in which laparotomy in the hands of the most skilful operators has failed.

VAGINAL HYSTERECTOMY IS CONTRAINDICATED IN THE FOLLOWING VARIETY OF CASES: If a woman has unilateral disease non-suppurative in character, I believe it best to enter the abdomen by a short incision, remove the diseased organs on the ailing side, or perform a conservative operation if possible. My reason for advocating the abdominal incision in such cases is that, after witnessing and performing a number of such procedures, I am convinced that the parts can be inspected and repaired more perfectly and with less violence to the tissues than when brought out and handled and returned through the vaginal cut. In plainly marked suppurative cases, however, even though only one side is apparently affected, I would still choose the vaginal route, unless it were a very mobile, perfectly outlined sac-wall separated from the uterus. Such cases, when operated upon, frequently need drainage, and when drainage is supposed to be necessary it had better be managed through the vagina. I have started to do vaginal hysterectomy, opened a pelvic abscess, removed a diseased tube, and ovary through the vagina, stopped the operation at that point, drained with gauze, and have seen that patient delivered of a healthy full-term child within two years. This, in answer to those who say that beginning hysterectomy means the abandonment of conservative measures. In doubtful cases it is perfectly feasible to open the posterior cul-de-sac, introduce the fingers and explore the pelvic cavity, ascertaining the condition of both tubes and ovaries, finishing up with a complete hysterectomy if both sides are found diseased beyond redemption. The age of the patient, the character of her symptoms, the chronicity of her ailment, and her general condition will frequently indicate which of these procedures is most desirable. For example, in a woman of advanced age, not particularly desirous of children, with a constitution more or less broken down by chronic pelvic disease, a vaginal incision, exploration, and probable complete hysterectomy would be indicated.

In some patients with chronic disease and large masses reaching to or above the umbilicus, the abdominal incision is frequently to be preferred if the mass feels very consistent and the patient is not too low. My reason for advocating abdominal incision in such cases is based upon the fact that probably we have here a large thick-walled abdominal or ovarian abscess which it would be very difficult to excise completely through the vagina; but in women very septic and very low I would still operate vaginally, removing the uterus if possible, even were I obliged to leave a large portion of the appendages.

In some women, where there is strong reason to believe that appendicitis exists, I would again operate abdominally, expecting to remove the diseased appendix at the same time. The same rule would apply when other abdominal disease, such as obstruction of the bowels, floating or movable kidney, is strongly suspected. There is another variety of cases, usually puerperal in character, of which I have seen two instances, one operated by myself abdominally, the other by Dr. Jacobs vaginally, in which I would choose the abdominal method. It is a form of gangrene of the uterus, in which the consistency of the uterine tissue is so destroyed that neither clamps nor ligatures are able to control the hemorrhage, tissues, and vessels cutting through on the least violence. These cases can be diagnosticated usually by their puerperal origin, by the severity of the septic symptoms, and by the extreme friability of the cervical tissue, coupled with an enlargement of the uterus and a profusion of exudate surrounding the tubes and ovaries.

To conclude, then, this part of our subject we can say that both abdominal and vaginal hysterectomy have their field in the surgery of the septic diseases of women; that he who would aspire to do the most perfect work in the alleviation and cure of these diseases must perfect himself in the performance of both varieties of work; that a certain proportion of cases can be relieved infinitely better by one method than by the other, though many patients in whom the indications do not plainly point to one variety of procedure, to the exclusion of the other, had better be treated in the manner most familiar to the operator; that the choice of the method of operating will always demand a careful investigation into the history, symptoms, and local condition; and that he will attain the greatest success who cultivates the most careful discrimination, guided by skill, experience, and judgment.

Concerning the method of choice relating to the performance of hysterectomy for fibroid diseases of the uterus, it can be stated in general terms that many of the considerations that have been advanced regarding septic diseases hold good to the same degree. Vaginal operation is here also particularly applicable to a certain variety of cases, and less dangerous than laparotomy. Where small or moderate-sized fibromata are complicated by large pus-tubes which have ruptured and produced poorly outlined pus-centres in the pelvic cellular tissue, or where suppurative pelvic peritonitis coexists, extirpation of the fibroid and the uterus and the pus-sac, combined with vaginal drainage, is, in the opinion of the writer, infinitely less dangerous when performed by a skilful operator than abdominal section. I have a feeling of conviction that a comparison of statistics, when advanced as an argument, is not always a perfect statement of facts. To speak plainly, the anxiety to furnish a good record of work performed gives rise to a selection of cases for operation in abdominal sections. I have seen women lying in general public hospitals, greatly reduced by more or less profound sepsis, on whom it was deemed inadvisable to perform abdominal section because of the almost certain serious result bound to ensue, and on whom an occasional vaginal cut was made to let out pus, hoping the patient might gain more strength for the coming ordeal; and yet I have never seen a vaginal operator hesitate to perform a radical operation upon such a patient, he believing confidently that it is in just such cases that the superiority of his methods is made evident.

With fibroids, to the same degree as with septic disease, the contamination of the general cavity is greatly avoided, and protection thereby given to the unaffected portion. Again, less shock is produced and the abdominal scar avoided.

In common with abdominal hysterectomy, it results in a more certain, rapid, and complete cure than mere removal of the appendages. There are certain conditions, however, relating to fibroids that demand consideration. It is conceded that the removal of a pedunculated tumor, leaving behind a normal uterus and appendages, is the ideal operation, and the most enthusiastic hysterectomist would hardly dare take exception to this statement. Submucous tumors have also been removed vaginally in numberless instances without hysterectomy; but these observations are scarcely subject-matter for this paper, which treats simply of that class of cases in which hysterectomy is to be performed.

Vaginal hysterectomy is contraindicated under the following circumstances: when the size of the tumor forbids its employment. There is most decidedly a reasonably fixed limit of size beyond which it is considered inadvisable to attempt to remove a fibroid uterus by the vagina. As it is well understood, the tumor and uterus are removed by the process known as *morcellement*, the hemorrhage being controlled by progressive application of pressure-forceps to the vessels, combined with traction of the tumor, while the mass is removed in small sections. The placing of the forceps and cutting the fibroid piece by piece take time, and when it is estimated that the time consumed will be considerably greater than that which would be required for its removal abdominally, vaginal section is usually inadvisable. In determining this question accompanying conditions should be carefully considered. A tumor the size of a fœtal head is generally considered about the limit that can be safely removed by the vagina. In making an examination to map out the dimensions of such a mass, care must be taken to estimate the aggregate volume of the different nodules. Its fixity and adhesions should also be taken into account lest these conditions interfere to too great an extent with the necessary descent toward the vaginal outlet. The length, breadth, and resistance of the vagina, as well as the conformation of the pelvis, should be ascertained, for it is frequently easier to remove a tumor the size of a large head through a roomy pelvis and a capacious, lax vagina than one the size of an orange through a narrow, virgin vagina and a contracted pelvis.

In case of doubt, the removal of a fibroma may be commenced by way of the vagina, and, in case of difficulty, finished from above. If the forceps or ligatures have been placed properly upon the uterine arteries below, the remaining portion of the work can be accomplished in a very short space of time. If the facts can be ascertained, there are also some rare cases in which the development of such tumors from the anterior wall of the uterus and upper cervix pushes and carries up with it an adherent elongated bladder, completely obliterating the anterior vesico-uterine pouch. This condition may possibly be recognized by noting the short, receding state of the vaginal cervix and by carefully sounding the bladder-cavity. Such tumors could probably also be operated upon with less danger of injury to important structures by making use of the upper incision.

Fibroid tumors demanding hysterectomy can be operated upon successfully both vaginally and abdominally according to the indications presented. Character, size, consistency, and mobility of the tumor, the accompanying local conditions of the mass, the general state of the patient, the conformation of her parts, and a proper estimate of one's own ability and rapidity, will furnish the indication as to the choice of method. To see Baldy, or Howard Kelly, or Baer, or Krug, or Eastman, and many others remove a fibroid tumor by our modern perfected abdominal method is, indeed, almost perfection; but to see Segond or Jacobs do the same with a loss of scarcely a tablespoonful of blood, and bearing in mind that not a ligature will remain within, or a scar be visible, is almost a revelation.

No. 353 Lasalle Avenue.

THE CAUSE OF THE DISPARITY FOUND IN BOTH HEALTH AND DISEASE ON PHYSICAL EXAMINATION OF THE UPPER PORTION OF THE CHEST.

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In the writings of our earliest authors of works on physical examinations of the chest we find allusions made to a disparity between the two

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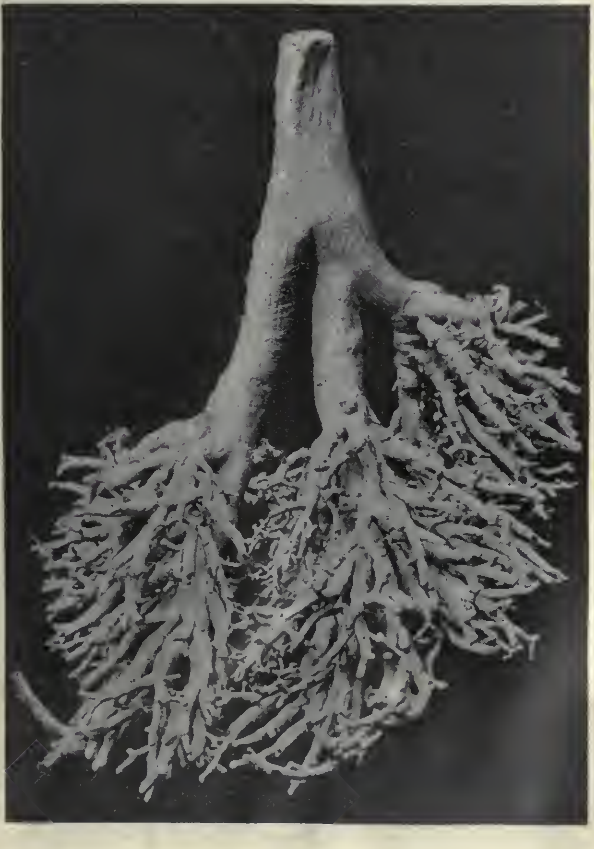
[1] Read before the Association of American Physicians, at Washington, June, 1895.

sides, as regards resonance, fremitus, respiratory and voice sounds. Without noting such variations as are accounted for by the presence of the heart, liver, stomach, etc., the most striking difference is found in comparing the infraclavicular regions of the two sides. I will refrain from quoting the complete list of authorities by reference to whom this point might be established, but it may be well to state that Louis referred to it in 1843, that it is mentioned by Stokes, while a full description of this difference is given by Flint in his *Practical Treatise on Physical Exploration of the Chest and the Diagnosis of Diseases Affecting the Respiratory Organs*, second edition, 1866. He says: "The practical bearing of the fact that there does not exist in most persons an equality of resonance on the two sides in the infra-clavicular regions will appear hereafter. . . . The fact rests on observation and is independent of any explanation that may be offered." He speaks again of the same fact on page 37, and on pages 149 *et seq.* he says: "The frequent existence of a greater resonance on the right side has been well known to practical auscultators of late years, and the thrill or fremitus is greater on the right side. It may be present on that side and wanting on the left side." "Vocal vibrations, thrill, or fremitus accompany the resonance in some persons, either limited to the right side or, if appreciable on both sides, more marked on the right side. . . . The bronchial whisper is often wanting, and, when present, is feeble. It may be present on the right side and not on the left, and is louder on the right if it is heard on both sides."

The above quotations refer to differences found in health. The same differences may be found in disease. Flint says that a relative broncho-vesicular respiration is natural to the summit of the chest, in front and behind, in a certain proportion of individuals. This being the fact, it follows that the question as to whether this modification of the respiratory murmur is due to disease or not pertains to its presence in the right side of the chest. "A well-marked broncho-vesicular respiration on the right side may not indicate more than a natural disparity. To be considered as a morbid sign, on this side of the chest, the broncho-vesicular respiration must be accompanied with other signs of disease." Quoting further from Flint, regarding exaggerated vocal resonance and bronchophony, we find this statement: "The difference, however, observes a regular law, namely, that the greater relative intensity is on the right side; and this is found to be the case over all the regions on this side, but is especially marked on the summit in front. . . . A whispering sound louder on the left than on the right side is a morbid sign. The character of the broncho-vesicular respiration should be strongly marked at the summit of the right side to be considered as evidence of disease, but, on the other hand, if situated on the summit of the left side, it almost always points to a morbid condition."

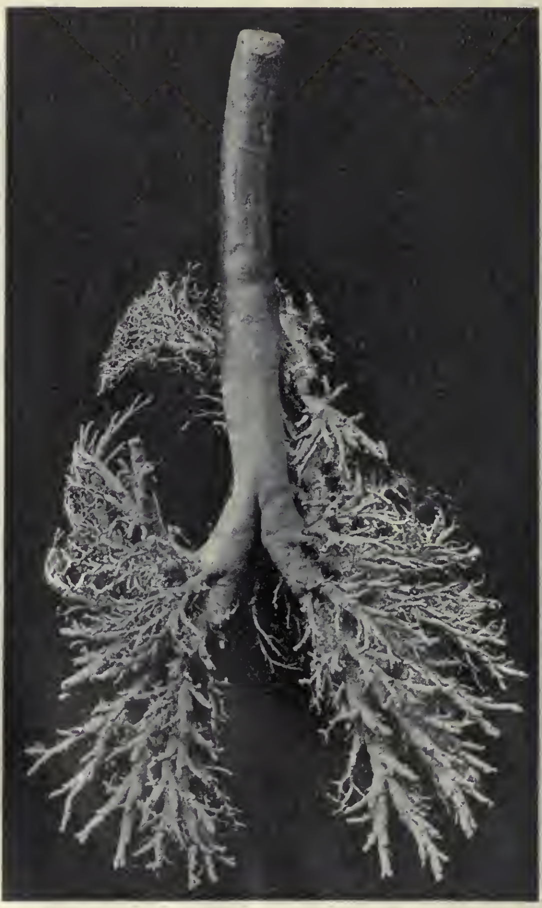
Dr. Vierordt might also be quoted to the same effect, and the same might be said concerning almost all authorities, including our teachers of to-day, in manuals for class-work, S. S. Burt on *The Exploration of the Chest*, C. M. Page in his third edition of *A Handbook of Physical Diagnosis*, James Tyson, and all others that have come within my reach. Many have undertaken to account for this disparity of the physical signs, but all the arguments are included in Gottman's explanation "That the increase in fremitus on the right side in health is accounted for by the fact that the principal bronchus is wider, is joined to the trachea at a less acute angle, and is situated nearer the vertebral column than the left. The latter is also separated from the spine by the œsophagus and the aorta."

FIG. 1.



It is not the object of this paper to discuss these well-known anatomical modifications. I desire to call your attention to an unrecognized cause of the disparity of the sounds elicited in the superior zone of the chest. That this cause has not been described before in accounting for the difference found in physical examination of the lungs is all the more surprising, as the feature is so striking and apparent. I would call your attention to these two casts which have been prepared to throw light on the exact anatomical relations of the bronchi. These casts are made by pouring a metallic alloy of very low fusion-point—about 140° F.—into the lungs through the trachea, the temperature of the molten metal not being sufficiently high to burn the tissues. A complete cast may thus be made of the larger and of many of the smaller bronchial tubes. The lung-tissue is removed from around the casts by solution in strong lye. It will be observed that the bronchial tube going to the

FIG. 2.



right upper lobe (as indicated by a strip of paper glued around this part of the cast) is given off at a point very near the origin of the right bronchus, and, in the case of the lung here represented, fully two and a half inches above the corresponding left bronchial tube (also marked by a strip of paper). This is not an anomaly, but, as has been shown by numerous experiments, is the common arrangement in the case of the human lung. The position of the superior bronchial tube of the right side varies little in most individuals, but it sometimes takes its origin higher than is shown here, and, in exceptional instances, it may come off from the trachea well above the bifurcation, as is shown by Quain in his two-volume edition of anatomy, as well as by Ewarts in his work on the *Bronchial Tubes and Vessels.* This fact is not mentioned by Gray nor even by Sappey in his four-volume treatise on Anatomy, nor have I discovered an allusion to it in any other work that I have examined, although the tube is pictured correctly in cuts made from castings of the lung.

It will be seen by comparing the arrangement of the bronchial tubes of the two lungs from below that the truly extra lobe on the right side is, as has been inferred by Aeby, the upper one, and that the upper lobe of the left lung is the homolgue of the middle lobe of the right lung. Not having been able to procure a cast of a human lung showing the right superior bronchus originating from the trachea, I will invite your attention to this second cast taken from a sheep, in which this bronchus (also marked by a strip of paper) is given off from the trachea itself fully two inches above the bifurcation. With the exception of this extra bronchus all the branches of both the right and the left bronchus come off below the level at which the pulmonary artery crosses the air-tube.

Without elaborating on the presence of this tube nor of the explanation of the transmission of the sounds of the lungs, I may say that it is pretty uniformly conceded that most of our physical signs are conveyed to the ear of the auscultator or to the hand of the examiner in the case of fremitus by vibrations of the air contained in the bronchial tubes. Cavernous or tubular sounds are yielded by these tubes unless their vibrations are modified by passage through vesicular portions of the lung. In any case, however, the large tubes form the principal media of transmission. It, therefore, becomes very apparent in viewing these casts that in health, or in like conditions of disease on the two sides of the chest, this right superior bronchus will, in most cases, intensify the vibrations, which will reach the ear or the hand of the examiner by a shorter route than must occur on the left side. The presence of this extra air-tube may also serve to explain the relative frequency of certain diseases on one side or other of the chest. I do not, at present, care to go into this matter, but merely wish to emphasize the fact that this tube acts as the principal factor in inducing a disparity between the physical signs elicited in an examination of the two lungs, and that, more surprising still, the very existence of this tube seems to have escaped the notice of most of our anatomists and all of our authorities on physical examination.

RELATIVE AORTIC INSUFFICIENCY CAUSED BY CHRONIC FIBROUS MYOCARDITIS.

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The patient was a negro laborer, a widower, fifty-four years old. His family history was negative. He drank to excess, smoked moderately, and acknowledged no venereal disease. Of previous illnesses the patient recalled only malaria and an experience with rheumatism lasting nine months. Four weeks before admission to Cook County Hospital he suffered from dyspnœa, thoracic oppression, pain and swelling of the legs, tympanites, anorexia, coughing, and occasional vomiting.

Eyes, ears, throat, nose, and tongue negative. Intellect clear. Orthopnœa; anasarca; ascites. The cardiac dulness was bounded by the third rib, midsternal line, and left midaxillary line. There was free respiratory excursion of the lungs over the heart. The apex-beat, visible in the sixth and seventh interspaces, was diffuse, heaving, strong, and exhibited some rotatory retraction. There was no precordial prominence. The second aortic tone was faintly heard over the anatomical seat of the valve, and at the level of the second rib it was replaced by a soft protracted blowing murmur best heard by immediate auscultation. The tricuspid tones were pure, as were the mitral. The systolic tone was somewhat weak, and the diastolic sound was succeeded by a soft blowing murmur, not only synchronous with the aortic bruit, but identical in timbre and gradually increasing in intensity as the stethoscope progressively neared the aortic valves. The pulmonic sounds were pure and unaccentuated. Quincke's capillary pulse was absent. The radials showed a pulsus frequens, altus, celer, rhythmicus. The sphygmogram gave a rapid ascent and descent, a high pointed apex, and a poorly marked dicrotic wave. On auscultation of the femoral artery, two tones were heard, while but one tone in systole was detected over the carotids. The peripheral vessels pulsated visibly and were not atheromatous. The lungs were normal everywhere, save over the left lower lobe posteriorly, where relative dulness and subcrepitant and sibilant râles were elicited. The abdomen was negative except for free peritoneal fluid. The urine was acid, 1017, containing some albumin and calcium oxalate crystals. During the twenty-three days the patient was under observation the pulse remained at 90 and never was irregular. The temperature-curve was uneventful, save for two elevations of 100° and 101°. The bowels moved every day. The treatment was tr. digitalis, 0.7, strychnia, 0.002, and diuretin, 0.6, q. i. d. Alcohol sweats failed, and a full warm bath was given each day. Morphine was imperative on account of dyspnœa. The later clinical notes mention delirium, pain in the left side, increasing anasarca, and ascites. On the twenty-third day the patient became suddenly comatose, the pupils contracted, the breathing became labored and sighing, and the pulse grew irregular. Despite free stimulation with digitalis, strychnine, nitroglycerine, and atropine, the patient died in the sixth hour of coma.

Autopsy. Rigor well developed; pupils equal; nutrition good; anasarca; pericardium somewhat thickened; enlarged left ventricle compressed left lower lobe. Heart weighed 630 gms. Arch of aorta not dilated but somewhat atheromatous; no arterio-sclerosis in peripheral arteries. Aortic and pulmonary valves competent by the hydrostatic test; mitral and tricuspid ostia admit three finger-tips; every valve perfectly normal; no thickening, no adhesions, no deformity. Left ventricle measured 10 cm. long and 2.5 cm. thick; right ventricle 10.5 by 0.6 cm. The routine incisions made perpendicularly into the heart's outer surface showed no myocardial alterations. Incisions parallel to the long axis of the heart, as advised by Koester, revealed an enormous number of cicatrices imbedded in the apparently uncomplicated hypertrophy of the left ventricle. The largest number of scars was found in the lower half of the anterior surface of the left ventricle near the apex and in the posterior third of the same chamber-wall near the auricle. These myocarditic areas were partly narrow bands of glistening cicatricial tissue located midway between the endo- and pericardium. Elsewhere were firm white plaques the size of a finger-pulp. A few isolated cicatrices occurred in the interventricular septum and the musculature of the right heart. Both coronary arteries were markedly atheromatous, but the left more than the right. In several places the lumen of the left coronary artery was greatly reduced, but beyond the stenotic plaques the lumen resumed its normal calibre. Here and there were minute atheromatous ulcers upon which, as well as upon the stenotic sites, were thrombi whose ante-mortem nature was shown by their firmness, adherence, and whiteness. The left lower lobe was compressed by the enlarged heart, and to touch it was resistant and contained little air, hence atelectasis from compression. The right lung was vicariously emphysematous—voluminous, pale, lobules larger. The right pleural cavity contained half a pint of clear serous fluid and the peritoneum two quarts of the same. The kidneys and liver were slightly enlarged and presented macro- and microscopically the characters of incipient cyanotic induration. Spleen, pancreas, gastro-intestinal tract, peritoneum, nervous system, bladder, ureters, and gall-bladder negative.

Clinically the case was a typical aortic regurgitation with consecutive ventricular hypertrophy, with dilatation and appropriate arterial phenomena. The post-mortem diagnosis was arterio-sclerosis of the coronary arteries, coronary thrombosis, and resulting myocarditis fibrosa chronica; hypertrophy and dilatation of left ventricle; compression of left lung; passive hyperæmia of liver, etc. Ante-mortem and post-mortem observation excluded a mitral lesion. The necropsy pronounced the semilunar valves normal. Hence the only lesion which can be considered is relative aortic insufficiency, in whose mechanism factors other than valvular are concerned.

Aortic is the rarest of all relative insufficiencies. In pulmonary embolism a relative pulmonary lesion occurs. Relative mitral inadequacy results from any cause operating through ventricular hypertrophy and dilatation. Atrophy of the papillary muscles, caused by pressure of a retrograde blood-column in aortic regurgitation, induces mitral incompetence. Bamberger described relative mitral lesions whose antecedent was fatty degeneration in the papillary muscles. Perverted innervation and inflammation of the muscular papillaries are additional causes.

The *rôle* of myocarditis in valvular lesions is circumscribed. It often selects the papillary muscle of the left mitral valve, and by cicatricial deformity prevents its systolic closure. More rarely it produces a genuine cardiac stenosis in the conus arteriosus pulmonalis S. aorticus. In a fairly exhaustive review of the literature of relative aortic insufficiency I have not found an instance due to myocarditis. It is possible that similar cases have been overlooked, as the longitudinal incisions are seldom employed.

The combined literature of England, France, and Germany does not record more than about twenty-five cases of relative aortic insufficiency, and some of these are reported twice, though dearth of details precludes their detection. Corrigan first recognized this phase of the disease, which bears his name. The independent existence of relative aortic regurgitation has been denied by many eminent clinicians. American authors do not mention its existence. Among English internalists Bramwell[13] states that aortic incompetence is never muscular. He speaks of increased arterial tension, dilatation, and aneurism of the aorta ascendens as causes of aortic regurgitation. Rosenheim[4] writes that to many observers it is questionable whether, without changes in the aortic valves, a relative insufficiency due to dilatation of the aorta may occur. Guttmann[21] questions its occurrence. Potain,[9] Rendu, and Charcellay deny, while Raynaud, Paul, and Huchard affirm its existence.

In considering aortic diastolic murmurs a preliminary consideration of all endo- and extra-cardial diastolic bruits is necessary. Fagge[11] enumerates among the causes for a diastolic murmur at the base of the heart aortic and pulmonary insufficiency, aortic aneurism, dilatation of the arch, and patent ductus arteriosus. Leyden recognizes diastolic aortic murmurs from relative aortic inadequacy and aneurismata of the arcus, aorta descendens, and abdominalis.[23] According to Hope,[12] a dilatation of the aortic ostium causes aortic regurgitation, the valves being intact. He cites a case of Evans in which a diastolic murmur resulted from rupture of the aorta into the pulmonary artery. Flint describes a short diastolic murmur produced by retrograde movement of the blood-current in the aorta, with competent aortic valves.[15] It is due to atheroma, and is always preceded by a systolic murmur. In rare instances[3] the diastolic murmur is independent of valvular or aortic lesions, and, hence, is strictly accidental. Its origin in some cases, as was first recognized by Rosenbach, is in the large veins near the heart, and its cause is the venous current, especially in anæmic conditions.[19] Such murmurs occur during diastole, when the centripetal venous flow is greatest. Their anatomical seat is: 1. The vena cava inferior, located by a murmur loudest over the lower part of the sternum. 2. The internal jugular vein (Sahli).[18] These murmurs can be extinguished by pressure on the vein. They are increased by turning the head laterally, by inspiration and position. 3. Possibly in the vena cava superior. In pernicious anæmia a diastolic murmur, referable to a weakened cardiac musculature, is sometimes heard. Guttmann[23] never heard an anæmic diastolic bruit. Litten[23] recalls an anæmic marantic woman in whom a diastolic murmur was interpreted by Frerichs as an aortic regurgitation, the autopsy showing normal aortic valves. Two cases of Duroziez's,[24] in which the clinical symptoms were those of aortic inadequacy, revealed on autopsy perfectly intact valves. He referred the bruit to the vena cava inferior. Litten, without knowledge of Duroziez's report, had observed a retro-sternal diastolic murmur appearing and disappearing without signs of aortic disease. Gerhardt[23] surmises that an accidental diastolic murmur may originate in spots of the pericardium.

An apparent aortic regurgitation (Schwalbe[22]) proved to be an endocarditis parietalis sinistra, with secondary ventricular dilatation. The valves were but slightly incompetent by the hydrostatic test, and perfectly normal. Sansom and Balfour[1] believe that a diastolic bruit, due to distention of the aorta and subsequent imperfect coaptation of the aortic semilunar valves, may be transitory. Duroziez believes that the murmur varies while the lesion is constant. Findlayson[2] has described two cases of diastolic murmur in which the aorta was atheromatous, but valves intact. He denies that the valves were incompetent. Fütterer observed, in the autopsy of a case dying in Leube's clinic, a tear in the wall of the aorta, producing a pocket which came between the valves, rendering them incompetent. Leube,[3] while commenting upon its infrequency compared with relative mitral lesions, admits its individuality, and enumerates among its causes interstitial nephritis, dilatation of the aorta and left ventricle. Friedreich,[5] Corrigan, Aram, Skoda,[16] Peacock, and Alvarenga,[9] mention relative aortic regurgitation. Weiss[17] concludes that diastolic murmurs are almost invariably organic, but Fraentzel[6] firmly asserts the existence of diastolic murmurs independent of structural changes in the circulatory apparatus. An aortitis acuta in Moxan's case[14] caused such relaxation of the aortic wall that the aortic semilunars could not close their ostium.

In comparatively recent times (1869) Lebert and Perls[20] have established relative aortic insufficiency upon a firmer anatomical basis. Their experience demonstrated that in advanced age the aorta becomes dilated and the ostium aorticum becomes too large an orifice for the valves to cover. Jaccoud,[10] over thirty years ago, reported a case of synechia cordis in which the left ventricle was so widely dilated that relative mitral and aortic regurgitations resulted. In nephritis Bouveret[25] observed an aortic regurgitation, but the autopsy showed that the aortic valves were intact and the aorta slightly relaxed, with chronic nephritis. A diastolic murmur was heard in a case of uræmia developing in the course of chronic interstitial nephritis. On post-mortem the anticipated renal changes were identified, the left ventricle was hypertrophied, the aortic cusps were normal and competent by the hydrostatic test; there were slight myocarditis and incipient arterio-sclerosis of the aorta with diminished elasticity in its wall. An instance of aortic regurgitation (Gerhardt[23]) had no pathological basis other than a dilated left ventricle. Renvers[7] has described two examples of aortic regurgitant murmur in which, at autopsy, the left ventricle was dilated and with it the root of the aorta. The first case was due to hard labor producing a cardiac dilatation, which, in its turn, caused the dilatation of the aortic ostium and the insufficiency clinically observed. In the second case arterio-sclerosis of the aorta, dilatation, and hypertrophy of the left ventricle and dilatation of the root of the aorta were the pathological diagnosis. Neusser diagnosed an indirect aortic murmur, but the necropsy proved the valves normal.

A close analysis of the etiology of relative aortic regurgitation establishes two principal anatomical agencies: first, dilatation of the aorta; and, secondly, a dilatation of the left ventricle. Aortic dilatation depends upon atheroma, senile involution, aneurisms, parietal tears, and aortitis acuta. Dilatation of the left ventricle finds its cause in excessive muscular exertion, peripheral arterio-sclerosis, aortic alterations. synechia cordis, increased arterial tension, endocarditis parietalis, nephritis, fibrous myocarditis—as in this case—or in idiopathic dilatation Schwalbe adds another causal factor, relaxation of the aortic valves due to reduction in their elastic fibres and increased arterial tension. One or both of the causes first named includes every phase of causation.

The clinical diagnosis of relative aortic incompetence is involved. Groedel[3], [27] describes the murmur of this lesion as uncommonly loud, musical, and audible at some distance, which characters are explained by the fact that the intact valves are thrown into rhythmical vibrations by the retrogressive blood-current they cannot resist. Although these "distance"-murmurs are heard in health and in loosening of the pockets of the aortic valves, yet in pronounced singing diastolic murmurs relative aortic regurgitation may be reasonably suspected. The singing murmur reinforced by dulness over the aorta ascendens has made an intra-vitam diagnosis possible. It may be remarked that the murmur in our case was the protracted breathing murmur usual in aortic regurgitation of organic origin, and, consequently, the character of the bruit in itself is no criterion. While it is established that murmurs play a minor *rôle* in the diagnosis of valvular heart disease, diastolic murmurs have been invested with a greater dignity than systolic, as they are rarely accidental. Fraentzel insists upon the subordination of cardiac murmurs to other physical signs. Cases are recorded in which no murmur has been heard in organic aortic regurgitation, as well as instances in which all the cardio-vascular symptoms of this disease except the murmur have been present while the valves remained normal. Venous diastolic murmurs can be excluded by the absence of left ventricle changes. Renvers comments that many cases of alleged healing of aortic incompetence were relative insufficiencies. Upon review of the clinical history it seems that the inefficacy of digitalis and all cardiants with the rapid course might in a future instance suggest myocarditis, and hence an etiological datum.

The pathological anatomical diagnosis is partly negative by exclusion, partly positive, with co-operation from clinical findings. Caution is needed in pronouncing the valves negative, especially when arteriosclerosis of the aorta with dilatation is the cause. Aortic atheroma may shrink the semilunar cusps and cause their excentric separation by dilatation of the ostium. Eichhorst insists that very slight changes in the valves may produce incompetence. The hydrostatic competence test is by no means final, as it does not represent vital conditions.

The mechanism of this condition is obvious when the analysis of the causal factors is considered. The relation a dilated aorta bears toward relative aortic regurgitation is self-evident. The *rôle* of the left ventricle has not to my knowledge received adequate consideration, except from Renvers, who points out that the process is the reverse of that occurring in organic aortic leakage. Organic aortic disease antedates the ventricular dilatation and hypertrophy, while in relative insufficiency the ventricular change precedes and causes the aortic lesion. Renvers describes minutely the structure of the fibrous auriculo-ventricular rings, reinforced by accessory fibres, the fila coronaria and the tendines coronarii, which latter by connective-tissue filaments, elastic bands, and muscular fibres connect the ventricular wall and the aortic orifice by one set of fibres and by a second series unite the wall of the aorta with the auriculo-ventricular ring of the mitral orifice. Perfect mitral and aortic closure depends upon the integrity of the tendines coronarii. The ventricular musculature is inserted into the auriculo-ventricular ring, and if by increased arterial pressure the left heart-chamber is dilated, insufficiency of both valves of the left heart is not a remote consequence.

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REVIEWS.

A MONOGRAPH ON DISEASES OF THE BREAST; THEIR PATHOLOGY AND TREATMENT, WITH SPECIAL REFERENCE TO CANCER. By W. ROGER WILLIAMS, F.R.C.S. London: John Bale & Sons, 1894.

MR. WILLIAMS, whose previous work in this same direction has been noteworthy, has now given to the diseases of the breast a broad and comprehensive consideration which makes his monograph the most valuable contribution of recent years to our knowledge of the subject.

While his conclusions may differ somewhat from those of many of his readers, there can be no question of the care with which he has collected the facts which form his premises, nor of the interesting and scholarly manner in which he has set them forth.

The chapters on the ontogeny and phylogeny of the gland; on its morphology, secretory anomalies and variations, either congenital or acquired; on its hypertrophy in both females and males, include many examples of the author's application of modern scientific methods to the problems of surgery.

In the space at the reviewer's disposal it will not be possible to give the arguments employed in many cases, but a *résumé* of the conclusions as to some of the most important subjects cannot fail to be interesting to those who have not seen the book.

Schwinzinger's suggestion that removal of the ovaries should be practised to bring about atrophy of the mammæ in order to prevent the development or the recurrence of cancer is considered in the chapter on involution and atrophy, and is very properly negatived. According to most oöphorectomists, extirpation of the ovaries in adult human females is seldom followed by marked mammary atrophy or the loss of feminine qualities, other than those of menstruation and procreation. Keppler, however, distinctly states that in most of his castrated patients the breasts subsequently wasted and tended to revert to the male type. The truth seems to be that when the essential sexual organs are removed early in life, before the secondary sexual characters have become thoroughly well established, the latter subsequently abort; whereas when the removal of these organs is deferred until the secondary sexual characters have become well established then the latter generally persist, provided that the patient is still in the prime of sexual life.

Polymastia are regarded as true reversions to ancestral types, and it is considered as a significant fact that supernumerary mammary structures appear only in definite positions, which almost invariably correspond with those occupied normally by the glands of polymastic animals. "On the whole," says Darwin, "we may doubt if additional mammæ would ever have been developed in both sexes of mankind, had not man's early progenitors been provided with more than a single pair."

Mammæ erraticæ, in which the abnormal glands occupy anomalous positions, are regarded as due to reversion to ancestral arrangements much more ancient than those reproduced in ordinary cases of polymastia, and the author thinks that his investigations prove that highly specialized structures like the mammary gland, with its nipple and appendages, never develop suddenly in any human being, except in response to ancestral hereditary influence. He rejects the opposing argument based on the presence of supernumerary teeth and mammæ in the walls of ovarian dermoid cysts, for the reason that while he admits that the sequestration of a portion of the cutaneous matrix, at an early stage of development, enables us to understand the presence of hairs, sebaceous follicles, sweat-glands, and other normal dermal structures in the walls of such cysts, he does not believe that highly specialized structures like mammæ and teeth can be thus produced from a cutaneous inclusion, but that it is far more possible that in such cases we have to do with very imperfect parasitic fœtuses, in which only the teeth or mammæ have survived.

Gynecomastism presents an example of what he calls the latent hermaphorditism of every human being. Castration when practised prior to puberty hardly ever causes hypertrophy of the mammary glands; hence Oriental eunuchs, who are castrated at a very early age, are never affected in this way. Similarly, castration of adults over thirty years of age is hardly ever followed by mammary hypertrophy. It is only when testicular destruction supervenes during the heyday of sexual life that gynecomastism subsequently ensues. As previously mentioned, in women, the effect of removal of the ovaries, under similar conditions, is to determine mammary atrophy. These apparently contradictory facts, he thinks, are rendered intelligible by reference to the principle of "correlated variability." It is a very remarkable fact that in every female all the secondary male characters, and in every male all the secondary female characters, exist in a latent state, ready to be evolved under certain conditions. It seems perfectly warrantable to assume that the normal condition of the mammæ in each sex is determined by correlation with the essential sexual organs. When the latter are destroyed the correlated integrated force determining mammary development also fails, so that the latent tendency to develop the opposite sexual characters then becomes manifest. His views as to the varieties of neoplasms of the breast must be passed over with the exception of those which relate to the extraordinary frequency with which the reproductive organs in females are attacked—nearly 70 per cent of all neoplasms in women. His theory in regard to this may be given in his own words:

> "From the fact that both of these parts are subject to remarkable post-embryonic developmental changes, it may be inferred that they are normally rich in cells, which still retain much of their embryonic capabilities for growth and development. It is probably owing to this peculiarity that they are so much more prone to originate neoplasms than other parts of the body.
>
> "The following considerations tell in favor of this view: It may be said of neoplasms in general that they arise from archiblastic (epithelial) structures much more frequently than they do from parablastic (connective tissue) ones. Thus, of 13,824 primary neoplasms, 72 per cent. originated from the archiblast, and only 28 per cent. from the parablast. In the breast archiblastic neoplasms predominate to a still greater degree, for I have found that no less than 95.74 per cent. of all such neoplasms have this origin, whereas only 4.26 per cent. arise from the parablast. Now, of all the tissues of the

body, the archiblastic ones have on the whole departed less from the primordial type than any others, hence their cells still retain their primitive powers of growth and reproduction in a higher degree than others. It is to this that I attribute the greater proneness of archiblastic tissues to originate neoplasms under pathological conditions."

He believes that both on *a priori* grounds and on the existing evidence the germ-theory of cancer should be rejected unhesitatingly, and thinks that "the microbe of cancer has not yet been discovered, because in all probability it does not exist." As to contagion, there is not a single authentic instance of the transmission of cancer from one individual to another, and the alleged successes in the attempts to transmit it to lower animals should, he thinks, be accepted only in a tentative sense.

He classifies mammary cancer as "acinous" (94 per cent.), and "tubular" the "duct cancer" of Bland Sutton and others. This classification finally shelves the ancient term "encephaloid," for when the villous papillomata, tubular cancers, myxomata, carcinomata myxomatodes, and sarcomata—hitherto generally confounded under this head—have been assigned to their proper groups, nothing remains to which this obsolete term can properly be applied.

Local recurrence of cancer he regards, with Heidenhain and the majority of surgeons to-day, as due to incomplete ablation of the primary growth; *i. e.*, not as a real reproduction of the disease, but as a continuation of it in the surviving unextirpated fragments. His figures show that while cancer is not a senile disease, it is most infrequent at the time of life when the forces of growth, development, and reproduction are in greatest activity. In both sexes the disease begins to be frequent as soon as the period of perfection has been attained—*i. e.*, after the thirty-fifth year; during middle age and the decline of life the liability to it increases, until about the fifty-fifth year; after which period it becomes markedly less frequent, and increasingly so as age advances.

The chapter on the geographical distribution of cancer is an interesting one, but the facts do not yet justify positive conclusions. The author thinks that the explanation of these variations must be sought in the conditions of life peculiar to the respective populations. "Generally speaking, the cancer mortality is lowest where the struggle for existence is hardest, the density of population greatest, the tubercle mortality highest, the average duration of life shortest, the general mortality highest, and where sanitation is least perfect—in short, among the industrial classes; whereas, among the wealthy and well-to-do—where the standard of health is at its best, and life is easiest, and among the agricultural community, there the cancer mortality is highest." Other things being equal, there are, in his opinion, no more potent factors in the causation of cancer than high feeding and easy living.

The family history of 134 women with mammary cancer seems to show that the disease is correlated with, *a*, pulmonary tubercle, *b*, insanity, *c*, apoplexy, *d*, arthritic troubles, and furthermore, and strange to relate, with great longevity on the part of the parents and equally marked fecundity. It might be thought that the number of cases does not justify such sweeping conclusions, but Mr. Williams states that although they are based solely upon facts derived from the study of the family histories of women with cancer of the breast, they are nevertheless, as he has ascertained, equally valid for cancer of all parts of the body. As to the prevalence of cancer, he considers its position unique. He estimates that in 1840 there were 4500 persons suffering from cancer in England and Wales, whereas now there are about 40,000. No other disease can show anything like such an immense increase.

The influence of trauma and of pre-existing inflammatory lesions he minimizes, contrary to the widespread belief both in the profession and among the laity, and concludes his careful review of this part of the subject as follows: "The outcome of all this is that intrinsic causes are much more important factors in the origination of cancer than extrinsic ones, which are by no means its necessary antecedents. In the vast majority of cases the outbreak of this disease appears to be entirely spontaneous; that is to say, it cannot be attributed to the immediate action of any appreciable extrinsic cause whatever. The occasional transformation of innocent into malignant growths must be admitted, but he thinks this very different from admitting that such neoplasms are specially prone to develop malignantd isease. This is disproved by the extreme rarity of the coincidence. My investigations show that non-malignant mammary neoplasms are less liable to originate cancer than are the glandular elements of the breast itself."

Transition from one species of malignant new formation to another has never been verified.

His mode of operation involves the complete extirpation of the breast with its various prolongations—too commonly neglected—the removal of part, or the whole, of the sternal portion of the pectoralis major and the thorough cleaning out of the axillary fat and glands. This is now the practice of the majority of surgeons everywhere, yet while so excellent an authority as Sutton says "The axilla should not be opened unless there is good reason to believe that its lymph-glands are infected," it seems proper to emphasize the above teaching which certainly has behind it the weight of modern authority.

The latter chapters of the book are no less complete and instructive, and deal fully with the less common forms of malignant diseases and with the inflammatory and suppurative lesions of the breast.

The monograph is one deserving the highest commendation even from those who do not accept the author's pathological views, as it is written in the true scientific spirit and bears witness on every page to wide reading, industrious and painstaking compilation, and original thinking. It is a most valuable addition to the literature of the subject. J. W. W.

DIE CAUSALE BEHANDLUNG DER TUBERCULOSE. EXPERIMENTALLE UND KLINISCHE STUDIEN. By VON EDWIN KLEBS.

THE TREATMENT OF TUBERCULOSIS. By EDWIN KLEBS.

THIS treatise of Klebs makes a book of 630 pages, and contains much of interest on the pathological anatomy of the disease. It is divided into two parts, and in each part there are several chapters. The object of the book is to show the favorable result of the treatment of tuberculosis by a substance which he has obtained from Koch's tuberculin. The substance derived from tuberculin he first called tuberculocidin, but by using a purer form of tuberculin, which he obtained by growing the tubercle bacilli on liquid media, he produced a tuberculocidin of greater purity and efficacy, which he calls antiphthisin. The antiphthisin is patented. The theories of the general pathology of disease which he derived from its anatomical study are in accord with the supposed mode of action of antiphthisin and its curative effect.

In the introduction he says the idea that tuberculosis represents a disease from which recovery is possible conforms with the facts shown by its anatomical study. Nothing is more common at autopsies than various evidences of spontaneous recovery from tuberculosis. In various parts of the body conditions are found which admit of no other interpretation than that the disease has existed here and has been recovered from. His attention was early called to the varying results which were reported of the treatment with tuberculin. In some of the reports it seemed to exercise a definite control over the disease. In other cases there was no such control. It seemed probable to him that these variations might depend upon the composition of the tuberculin. Tuberculin should not be considered as a definite chemical substance, but as a mixture of various substances, some of which might exert a favorable action, while other substances contained in it either had no action or an injurious one. He made the attempt to separate from the tuberculin those substances which exert a favorable action on the disease from the others. Koch's theory that the favorable action of the tuberculin consisted in production of extensive necrosis, with a walling up of the tubercle bacilli in the necrotic material, did not seem to him to correspond with the facts. He also thought that the second idea of Koch's, that the tubercle bacilli themselves were not influenced by the tuberculin, was not certain. Most of the theories of the action of the tuberculin come from observations made on lupus, and are not applicable to all forms of tuberculosis.

In the first chapter there is a very good historical review of tuberculosis. He speaks of his own early work on the disease and the various facts derived from its anatomical study which led him to believe in its infectiousness. He was early led to the belief that the alimentary canal was frequently the source from which infection takes place. He repeated the inoculation-experiments of Villemin, using the peritoneal cavity for the seat of inoculation, and was able to follow the course of the disease from this to other organs.

While in Berne he was struck with the frequency of miliary tuberculosis in the cattle-herders on the Berne overlands. These people live during the entire summer on the Alps, and their food consists entirely of milk and bread. The food seemed to be the only possible source of infection, and he was able to trace it to the milk. He had already shown the identity of the pearly disease of cattle with tuberculosis, and found it common in these herds. Anatomical investigation of these cases of miliary tuberculosis almost always showed the absence of old tuberculosis foci such as were described by Buhl, and he was led to regard the disease as one conveyed directly from the cattle to man by the use of infected milk.

In his earlier work on tuberculosis he thought he had discovered the specific organisms of the disease in small, round, or oval organisms which he found in the process.

In the second chapter, relating to the source of disease, he takes up the various views as to the manner of infection. In the earlier views the lungs were regarded as the essential seat of the process and as the primary focus of infection. A more thorough investigation, based on a greater knowledge of the anatomical features of the disease, shows that this is by no means the case. After it was found that all of the pathological processes designated as scrofula undoubtedly belong to tuberculosis, there seems no doubt that the digestive tract is by far the most common portal of infection. The tubercle bacilli can enter into the tissues from the digestive tract without producing any local lesions at the point of entry, and from this they are generally conveyed to the nearest lymphatic glands and produce the disease in these. In certain cases, especially in adults, the tubercle bacilli can enter from the alimentary canal into the blood and produce a general miliary tuberculosis without any affection of the lymph-glands. The evidence of this is given in the cases which he saw in Berne, where miliary tuberculosis was produced from the using of milk of tuberculous cattle in perfectly healthy strong adults. He produced acute miliary tuberculosis in a dog by feeding it on the milk of a tuberculous cow. The course of the disease is influenced by the source of infection, the virulence of the organisms, and the resistance of the tissue. Even in the lungs the lesions of the disease differ, when the source of infection is the alimentary canal, from the inhalation-tuberculosis, in which the first evidence of the disease is seen in tuberculosis, bronchitis, and peribronchitis.

In infection by the blood the tubercle bacilli enter into the vessels of the infundibula of the lungs and find here the most suitable conditions for their growth. Pulmonary hemorrhage favors the extension of tuberculosis, in that the hemorrhagic areas offer suitable places for the development of the organism. He thinks that actual heredity of tuberculosis, which he also speaks of as an intrauterine affection, is not to be denied, but takes place very rarely. It is possible that this intrauterine infection can take place either from the mother or from the father.

Immunity in tuberculosis may depend upon a number of conditions, among which the vascularity of the organ into which the tubercle bacilli first enter is of primary importance.

In the third chapter he gives the action of tuberculin on infected guinea-pigs. He shows in various ways that tuberculin may have a direct destructive action on the tubercle bacilli, and also may produce a condition of immunity. The spontaneous healing of the tubercle, as far as can be told from observations made on man, is due to three different processes: Necrosis and exfoliation of deceased tissue, as are seen in lupus, cicatricial formation,' and simple retrograde metamorphosis of the tuberculous tissue after the tubercle bacilli have been destroyed. Tuberculous tissue is analogous to that produced around parasites of all sorts, and offers a certain degree of protection against the destructive influence of the bacilli. This protection of the tuberculous tissue loses its power of action as soon as the cells degenerate; that is, as soon as they lose their physiological activity or break down. The persistency of the living tuberculous tissue secures the organism from further danger.

A condition of latent disease lasting for a long time may be brought about. The latency of the disease ceases when the tubercle bacilli have so increased that they extend beyond the limits of the tuberculous tissue. This last condition is especially apt to appear when the cells of the tubercle undergo a diminution in their vital resistance.

In his studies on the healing tubercle he was able to show the presence, by various means of staining, of certain chemical substances, coming from the cells, which he thinks could be of importance in the process. Among these probably the most important is the globulin which is derived from the red corpuscles. The favorable action of the tuberculin is due to an exudation produced around the tubercles under the influence of which the cells lose their rigidity and no longer protect the bacilli. They become transformed into normal cells, and offer no opposition to the entry of the fluid exudation into the tubercle, and this exudation can then exert its destructive influence on the tubercle bacilli. The local leucocytosis which accompanies the inflammatory exudation brings to the tissues nuclein, which has an action both on the bacilli and the cells.

Klebs regards as the most important constituent of tuberculin a substance which he calls tuberculocidin, which is obtained from the tuberculin of Koch by precipitation with alcohol and further purification of the precipitate.

In the second part he takes up the results of treatment of tuberculosis with tuberculocidin. In his study of the action of the tuberculocidin he divides the tuberculous process into four stages. In the first, which usually corresponds to the period of latency of the disease, the changes in the organs are so slight that they may escape a superficial examination. In animals this stage corresponds to between the second and third week after inoculation. In the second stage there is a further extension of tuberculous disease to a number of organs and an extension within the individual organs. In the lungs at this period an infiltration can be made out with certainty. In the place of the small disseminated foci there are large areas of infiltration shown by dulness on percussion. Tubercle bacilli appear in the secretion and give a certain diagnostic sign, but they are in small numbers. The third stage is characterized by the beginning of destruction in the diseased areas; cavity-formation in the lungs and superficial ulceration may also appear. As long as these are in slight degree it is possible for recovery to take place. This third stage may be regarded as the beginning of a phthisis. In the fourth stage there is a well-marked phthisis, with an extensive destruction of organs.

In all of these stages of the disease the tuberculocidin exerted a beneficial influence. This was more marked in the earlier than in the later stages.

In Klebs's first methods of producing the tuberculocidin he used Koch's tuberculin. He succeeded afterward by other methods of producing a tuberculin of a better character than that produced in the method of Koch, and from this tuberculin he has obtained a tuberculocidin which he designates as antiphthisin, which substance is patented. This antiphthisin has a much stronger action than the tuberculocidin, and has none of the unpleasant features observed in tuberculin and in the more impure tuberculocidin.

At the conclusion of the work he gives a number of letters from physicians as to the results obtained by the use of antiphthisin.

W. T. C.

DEMON-POSSESSION AND ALLIED THEMES, BEING AN INDUCTIVE STUDY OF PHENOMENA OF OUR OWN TIMES. By REV. JOHN L. NEVIUS, D.D., for forty years a Missionary to the Chinese, etc., etc. Chicago, New York, Toronto: Fleming H. Revell Company, 1895.

THE title of this book, when we first read it, raised high hopes in us. We assumed at once that it indicated a contribution to anthropological and psychological literature which would prove of great value because written by an educated and travelled observer, who had had exceptional opportunities for such studies among a strange and interesting people. We thought, as a matter of course, that we should learn, by a process of close inductive reasoning, based upon original observation, new phases of the universal manifestation of hysterical and hypnotic phenomena under the influence of crude and primitive beliefs. We had read Regnier's instructive monograph,[1] in which it is shown that these peculiar psychical perversions were important elements in the practices of ancient religions. We were familiar, of course, with the work done by Charcot and his school in illustrating these same phenomena in the middle-age witchcraft plagues. We had, and have, no doubt that a rich field remains still to be explored and reclaimed by science among contemporary African and Asiatic peoples; and we thought that we saw in the title of this book the promise of the beginning of such a work.

But we were mistaken. The book has been a painful surprise to us, and a complete disappointment. We were not very familiar with Chinese missionary literature, and we were amazed to discover how little that we can call good, useful, original, reasonable, and scientific an old Chinese missionary could put into a book as a result of forty years' observation in a strange land. A feeling in us, which was never entirely sympathetic with missionary enterprises in China and elsewhere, has been intensified into one of downright aversion by this unfortunate book.

The object of Dr. Nevius is to preserve a chronicle of certain occult manifestations among the Chinese and to prove that they were true instances of "demon-possession."

The author's claim, however, that he has made an inductive study cannot be allowed for a moment. It is so preposterous as scarcely to be taken seriously. He states that he went to China a disbeliever in demon-possession, and yet he acknowledges that he always believed in a literal interpretation of the demonology of the New Testament. What can be expected from an "inductive" philosopher who assumes everything in his premises? He claims that his study is based upon observation, whereas the argument is based upon a tissue of the crudest and most transparent superstitions and ghost-stories of an ignorant peasantry. These tales were accepted on the testimony of native and foreign Christians who evidently were as superstitious as Dr. Nevius himself, and were confirmed by replies to a circular letter from other missionaries who were of the same type of mind.

The "phenomena," in brief, were of the conventional kind—haunted houses, strange noises, destruction of dishes and furniture, table-rapping, bad luck, and last, and alone important, quite typical hysterical and hypnotic manifestations, with which alone we are concerned. All these phenomena were accepted by our "inductive" missionary as so many incontrovertible proofs of demon-possession. No adequate attempt was made to investigate them in a rational spirit; on the contrary, the author of the book was promptly converted to an implicit belief in this heathenish diabolism, and upon this mass of misinterpreted facts he has written one of the most extraordinarily perverted books of the present day.

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[1] Hypnotism and Croyances Anciennes.

The only original part of Dr. Nevius's book is in the first few chapters, in which he narrates, very inadequately and with absolute credulity, incidents of the so-called demon-possession among the Chinese. This part, which might have been expanded into a most interesting and valuable exposition of fetish-worship and hystero-hypnotic manifestations among a remote people in the depths of China, is written in such a prejudiced spirit and with such absolute disregard for all the rules of scientific criticism, that it presents material of practically little value to the anthropologist, and of such a kind as can only be accepted after much winnowing from chaff, and after careful comparison with studies by more reliable observers—which we hope may yet be made.

It is sufficient for us to note that, even according to the misconceptions of Dr. Nevius, the Chinese peasants present typical phases of that now well-recognized disorder of the nervous system known as hypnotism; that these phenomena in them are readily excited by religious emotions; that they apparently follow the same fixed laws as have governed them among all races and in all times; and that the central phenomenon of this hypnotic state is the so-called double personality.

The only attempt in Dr. Nevius's book at what we may call a scientific discussion is in his chapter on the "pathological theory." Having accepted and swallowed whole the demonological theory, he seems to recognize the necessity for differentiating demon-possession from disease of the nervous system. In his attempt at differentiation, however, he unconsciously but completely gives the whole subject away to the pathologists. According to Dr. Nevius, the chief differentiating points of demon-possession are (1) the automatic presentation and the persistent and consistent acting out of a new personality; (2) the evidence of knowledge and intellectual power not possessed normally by the subject; (3) change of moral character (which practically is the same as change of personality). The psychiatrist will see at a glance in the data for this "differentiation" the familiar stigmata of hypnotism. The so-called double personality is the central and most interesting phenomenon of hypnotism, and is now so well known that it has even become a part of the stock in trade of the average novelist—who, however, as in the case of the author of *Trilby*, exaggerates and abuses it even worse than do the missionaries to the Chinese. As for "new" knowledge—as, for instance, the faculty of speaking in an unknown tongue—we believe that there does not exist an instance in which this alleged power has not been found on careful investigation to be but the result of precedent psychical states and impressions. It is significant in this connection that this alteration of personality was so realistic in these remote and densely ignorant Chinese provincials that it gave the vivid impression that the victims were really possessed by personalities not their own, and that this impression was so strong that it completely deceived an educated man like Dr. Nevius and converted him to a belief in peregrinating devils. Surely no stronger or more unique proof can be needed of the genuineness and completeness of these hypnotic manifestations! But if the distinguishing marks upon which Dr. Nevius relies for "differentiation" are identical with the symptoms of hypnotism, what becomes of his differentiation?

The major portion of Dr. Nevius's book is made up of a curious dialectic by which he attempts to show that there is only one explanation for these phenomena, and that that lies in the theory of possession by devils. In this attempt the author has resorted, rather indiscriminately, to a variety of writers, only a few of whom can be considered of first-class authority as specialists in neuro-pathology. Apparently because these writers cannot explain profound psychical changes in simple elementary terms, Dr. Nevius thinks that he is justified in explaining them by the crudest and most unintelligible of all theories—the theory of demons. No reference whatever is made to the modern French school, whose studies have so well illustrated the mutual relations of hysteria and religion, and whose investigations certainly cannot be left out of account in an inquiry of this kind. Dr. Nevius does not seem even to have known of these writers.

This book is a *reversion* to a lower plane of culture than fortunately now prevails. The only explanation for it is to be found in the self-evident, but lamentable, fact that Dr. Nevius, instead of converting the heathen, was perverted by them. Such a book would be impossible for any man who had not himself been far removed for a long period from the best civilizing influences. When Christian educated ministers lead in such a demoralizing witches' Sabbath as is depicted in this book, then does the gap between orthodox theology and pure science seem wide indeed. The influence of the book cannot but be wholly bad: those who believe in its conclusions will be injured in their most vital intellectual parts, while those who do not believe in them will be repelled, not only from the book itself, but from much that it is supposed to represent. In conclusion we can only ask, Are these the men who are to convert China, and are these the doctrines for the sake of which China is to be converted? J. H. L.

A Manual of Modern Surgery, General and Operative. By John Chalmers Da Costa, M.D. Pp. 720. Philadelphia: W. B. Saunders, 1894.

In a book of over 700 pages the author presents the fundamental principles, the operations, and the accepted methods of modern surgery.

The excellent order is followed of presenting the subjects of bacteriology, inflammation and repair, the surgical fevers, terminations of inflammation, and the general traumatic infectious diseases, including septicæmia, pyæmia, erysipelas, tetanus, tuberculosis, and syphilis.

There then follows a chapter upon morbid growths, contusions, and wounds. Having disposed of these general pathological conditions, the author presents the various surgical diseases in a regional way. First, the heart and bloodvessels, followed by diseases of the bones and joints, muscles, tendons, and bursæ; diseases and injuries of the nerves, diseases and injuries of the head, surgery of the spine, respiratory organs, digestive tract, diseases and injuries of the abdomen, of the rectum and anus, of the skin, the nails, and lymphatics of the genito-urinary organs.

Then there is a chapter upon anæsthesia and anæsthetics, burns and scalds, a chapter upon bandages, and one upon plastic surgery, and the manual closes with a chapter upon asepsis and antisepsis.

It will thus be seen that the whole ground of surgery, beginning with bacteriology and pathology, is completely covered.

To review this manual in detail would be a task of little value to those desirous of a knowledge of the book. It is only necessary to say that the author has presented concisely and accurately the principles of modern surgery, and that he has suggested so clearly variety in treatment that there is no confusion in the student's mind as to the advisability of this or that method.

The only criticism of importance which it seems should be made is that the chapter upon orthopedic surgery is lacking in the knowledge of details of treatment, which is only too often found to be the case in the writings of the general surgeon upon orthopedic subjects. The chapter upon fractures is excellent. There has long been needed just the concise and careful description of each fracture, coupled with a description of its proper care, that we find in this admirable chapter. It would be satisfactory if, instead of presenting the illustrations with the bandages applied, the splints had been shown in position uncovered by the bandage. The chapter upon bandaging is excellent.

The book, therefore, as a whole, is a valuable one, and will be found of great service to those for whom it was intended. The consideration of the treatment of the various surgical diseases is most excellent and practical. This is a book which can be recommended to students in their school-work and hospital service, and is of great value to the general practitioner for ready reference. C. L. S.

La Thérapeutique des Tissus. Compendium des Médications par les Extraits d'Organes Animaux. Par le Dr. M. Bra. Pp. xxxi. 624. Paris: G. Rothschild, 1895.

The Therapeutics of the Tissues.

Six years have passed since Brown-Séquard startled the members of the Paris Biological Society by the recital of his personal experience with testicular fluid. The method of Brown-Séquard as presented in this substantial volume can neither be characterized as the "delusion of a senile mind," nor do we believe that the author would wish it to be designated as "the most important discovery of the century." Of the various titles to be found on the title-page we prefer the subtitle "Compendium of Medications by Extracts of Animal Organs," because it more accurately describes the book than "The Method of Brown-Séquard," "A Treatise of Histotherapy," or "The Therapeutics of the Tissues." The volume is a compendium of the results of physiological experiment, clinical observation, and personal experience. At the outset we find letters and prefaces by Constantin Paul, Mendel, Ewald, Bruns, Emminghaus, and Byrom Bramwell, before we come to the preface proper by the author. These letters are guarded, chiefly devoted to the commendation of the plan of the work or to the results obtained by the administration of the thyroid gland. After a short historical sketch we find the first 187 pages devoted to the use of testicular fluid; much of the writings of Brown-Séquard upon this subject, with which we are already familiar, are here reproduced. In fact, the author, recognizing him as the father of Organotherapy, everywhere pays tribute of the disciple to the master, and sometimes stays his critical pen that the master's words may occupy the prominent place. The cases cited were furnished by observers from widely scattered points of observation, and vary much in scientific value. Those writers who seek to explain the good results obtained from the administration of testicular fluid, either by suggestion or by virtue of its constituents, as spermine, nuclein, or sodium phosphate, receive but little attention, and the physiological basis is practically that of the originator himself, now so well known as scarcely to need repetition. This section is one of the two sections of the book; the other being that devoted to thyroid medication. Here, in spite of the author's devotion to his master, we find an evident purpose to present as strong an argument as possible, and we find attention paid to details which usually escape narration. Due credit is given to D'Arsonval, and we think rather more than their work merits, to those who have presented clinical reports. No one need refer, in vain, to this book if he seeks information as to *technique*, dose, or the application. If we might criticise the results which are recorded, we would say that they prove too much—especially those of the treatment of tabes dorsalis. Nearly two hundred pages devoted to testicular fluid and we come to Chapter III., a short page devoted to ovarian medication! The cases of Régis and Clément are merely referred to. We fear that proper consideration has not been given to this subject, and the "new woman" will feel the neglect which even the allusion to the successful treatment of forty-six old women by "*une dame Américaine*, MMe. Brown," will not atone for. In Chapter IV., the "Medication by Cerebral Gray Matter," the nervous transfusion of Constantin Paul, occupies fifty pages. For this, also, Brown-Séquard is claimed as the father on the general principle that he is the father of the method of all the organic liquids, although Constantin Paul is granted to be the adopted father. To carry the simile somewhat further, one receives the impression that the author treats this subject in somewhat of a step-fatherly fashion when he concludes that if one would use the liquid of the gray matter he should reserve it, until better information, for the treatment of neurasthenia, or indeed to employ it concurrently with the testicular fluid. The chapter which possesses the greatest interest is that in which the therapeutics of the thyroid gland is fully set forth in about one hundred and fifty pages. It is complete, save the omission of the work of Gourlay upon its chemical and physiological composition, well brought down to the date of publication, and fair in its statements. It presents one of the best reports of the most successful of the organic extracts. Carditic medication, by means of the cardine of Hammond, is presented. The criticism is one of its preparation (*étrange filtration*), and considerable skepticism. This is shown by the inquiry, "Does a carditic medication exist?" which we find at the head of the chapter, and the closing sentence, "Such, at least, is the theory propounded (*émise*) by Hammond." In the sixty pages on "Pancreatic Medication" we find plenty of theory and some facts. The literature has been thoroughly gone over, and the general conclusion is in favor of the testicular fluid as preferable to the pancreatic fluid, at least so far as diabetes is concerned. The hepatic medication fills an interesting chapter, although it must be admitted that the conclusions are by no means definite. The use of the fluid obtained from the suprarenal capsules seems to possess considerable value in the treatment of Addison's disease, but, according to Brown-Séquard, both liquids, testicular and suprarenal, should be injected, the one after the other, at different points. The muscular medication has received but little attention; what is known is, however, well presented. Renal medication has been carefully studied, with the view that, in the future, it is likely to play a considerable *rôle* in therapeutics. The remainder of the book is devoted to medication by pulmonary substances, and by those derived from the spleen, lymphatic glands, and bone-marrow—the so-called Hæmopoietic Medication. A brief general *résumé* closes the book.

In conclusion, we heartily commend the work to the attention of the profession. Whatever the value of the methods herein described may be—and even six years are not sufficient to determine it—this much is certain, the suggestions which it contains are valuable, and in many portions, notably in the chapter upon the thyroid, one finds many practical hints of great importance. On the other hand, extreme statements, for example, those of pages 93 *et al.*, detract somewhat from the scientific value of the work. In the main, it is well printed and convenient for reference; the illustrations, however, are atrocious, giving the reader the impression that some, at least, have been reproduced from those used to illustrate the weekly medical press. We congratulate the author upon the amount of information which he has so industriously collected; we wish that some of it had been more thoroughly digested. As the book stands, its merits and defects being considered, it should have a place in the library of every progressive, well-informed physician.

R. W. W.

TREATMENT OF THE DISEASES OF THE STOMACH AND INTESTINES. By DR. ALBERT MATHIEU, Physician to the Paris Hospitals. Pp. 294. New York: William Wood & Company, 1894.

THE English translation of Dr. Mathieu's book has been received with much favor, although it must be said that it is not entirely in accordance with the latest developments of the pathology and diagnosis of digestive diseases. As a work which is devoted to treatment almost exclusively it should be strictly adapted to the vast progress that has been made in this direction.

The part treating on semeiology is adapted more to the course adopted by certain French observers than the more progressive German teachers. The multiplicity of subdivisions by Hayem and Winters are thus brought out to some disadvantage as rather increasing the complexity of terms than simplifying terminology according to pathological conditions.

The dietary directions, although often minute in detail, lack the precision imparted by the application of heat-values for nutritive purposes. Some statements are made which are not compatible with facts. Thus, when on page 28 the author states that urine rich in phosphates becomes turbid on cooling and "clears up when heated," he had certainly the "urates" in mind and not "phosphates." When the author disclaims the use of peptones as food we can but join him in his opinion, notwithstanding the present craze to supply food by the various peptones of the market. While gastric atony is admitted to be a nervo-motor dyspepsia it is claimed here also to be often, though not always, accompanied by secretory atony, a precept which is generally disputed. That as a consequence thereof the author should think highly of ipecac as a remedy in this affection evidently arises from such an opinion, as this drug is scarcely considered more than a secretory stimulant. The recommendation of alkalies to be taken before meals and in hot drinks is in accordance with recent experiments and observations, and we can but further agree with the author when he denounces pepsin as useless in the treatment of dyspepsia. The treatment of pseudo-membranous enteritis is given in a rational manner and deserves to be followed. The researches of Bouchard regarding auto-intoxication are closely followed and the chapter on gastro-intestinal antisepsis is based upon it, with recommendation of benzo-napthol and beta-napthol for this purpose, which theoretically promise so much and practically yield so little.

The subjects of typhlitis, perityphlitis, and appendicitis are treated in a manner that is hardly in accord with the latest developments in this direction. In intestinal occlusion the electrical enema is recommended and much lauded, although perhaps its only advantage is that it does not materially interfere with subsequent surgical procedure. The appendix of a series of prescriptions is here probably as much out of place as arrays of routine prescriptions are always to be deplored in connection with general or special works on the practice of medicine. Notwithstanding some of the weak points in the book, referred to by us, it contains a great deal of practical knowledge which should prove of value to the practitioner. L. W.

DIE NASENHÖHLE UND IHRE NEBENHÖHLEN. NACH ANATOMISCHEN DURCHSCHNITTEN IN ZWELFE TAFELN DARGESTELLT FÜR ARZTE UND STUDIRENDE. Von DR. A. ONODI. Docent für Rhinologie und Laryngologie an der Universitat in Budapest. Wien, 1893.

DR. ONODI'S ATLAS OF THE NASAL CAVITY AND SINUSES. By ST. CLAIR THOMSON, M.D. London: H. K. Lewis.

THIS admirable little book presents in the form of pictures of sections of the skull and of the head the parts which are of interest in the study of the diseases of the nose and associated parts. The figures are cut on wood and are of natural size. The book can be warmly recommended to all interested in the subject. H. A.

PROGRESS
OF
MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF
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THE TREATMENT OF ECLAMPSIA.

DR. EDWARD P. DAVIS believes that eclampsia is the result of a complex irritant poison, which is produced not only by failure of excretion by the kidneys, but also by failure in the action of the liver, the skin, the lungs, and the intestines. Several cases are cited which illustrate the view above expressed. In a series of eighty-four cases, in which five hundred and sixty-four examinations of the urine were made, the author found the average percentage of urea present before labor to be 1.4. After labor, in healthy women, an increased excretion of urea is observed for several days following parturition. A second series of cases confirmed these results. The most pronounced cases showing the effects of toxæmia upon the nervous system without the occurrence of eclampsia are observed in women of highly nervous temperament, and often highly educated and intelligent women. In these patients the gradual development of malaise, headache, sleeplessness, nervous irritability, melancholia, apprehension of approaching confinement, with gradually diminishing excretion from the intestines and kidneys, form a clinical picture which must not be neglected. These patients should not be treated by the bromides. Rest and increased excretion invariably result in the disappearance of the symptoms. To study the excretory processes an estimation of the solid matters and the urea of the urine is important, and in addition the placing the patient upon a fixed diet-list. This should consist of the lighter sorts of meat, fish, oysters, birds, lamb, and mutton in moderation, with an abundant supply of fresh fruit, fresh vegetables, stale bread, and water taken freely between meals. For restless patients who excrete badly, the warm bath at night will often assist greatly in procuring sleep. Light flannel next the skin, entire absence of constriction about the waist, the use of gentle laxatives, plenty of fresh air, and avoidance of over-exertion usually suffice to keep these patients in a comfortable condition. In the presence of eclampsia two indications are paramount. The first is to cause prompt, thorough, and copious elimination by every possible means. The hot pack, free purgation, and saline transfusion are of the greatest importance. To be avoided are sedatives, which hinder excretion and depress the cardiac and respiratory centres. If apoplexy threatens, and a heavy, full pulse indicates bleeding, such a procedure is justifiable. It is rarely the case that a patient suffers from profound toxæmia and eclampsia without the beginning of labor as a direct result of the stimulation of the uterine nerves which the retained toxins furnish. Taking advantage of this conservative process, rapid delivery is indicated so soon as it can be accomplished without positive and severe injury to the mother. The interests of the fœtus are also here served, for the same poisons which threaten the mother often kill the child.—*Therapeutic Gazette*, 1895, No. 7, p. 433.

TAKA-DIASTASE.

MR. FERDINAND LASCAR recalls the fact that diastase has an action upon starch identical with ptyalin. Diastase is contained in a greater or less extent in the different extracts of malt, but in them its utility as a starch-converting agent will always remain a limited one. The diastase now made by takamine is a dry powder, tasteless, and of no perceptible odor, and is powerful enough to convert one hundred times its weight of starch into a soluble condition. The author has even converted 50 per cent. more than is claimed for it. One of the peculiarities of this product is the rapidity with which this conversion takes place, four minutes being sufficient so fully to produce the change that neither iodine nor the microscope can detect unconverted starch. In the making of the tests, as well as in the manufacture of the product, heat should be guarded against, as it easily destroys the action of diastase. The field of usefulness of this product is not alone in infant-feeding, but as well in the amylaceous dyspepsias of adults, which are by no means infrequent.—*Therapeutic Gazette*, 1895, No. 7, p. 437.

ARECOLIN.

DR. G. LAVOGNA has made an experimental study of the physiological action of this new alkaloid, which is obtained from the areca-nut, which has been prescribed for the removal of tapeworm. The alkaloid occurs as the hydrobromate, a permanent, slightly hygroscopic salt, of the formula $C_3H_8NO_2HBr$. Fröhner found that it possessed sialogogue properties, even excelling those of pilocarpine; that it was also a laxative and water-extractive remedy. The author, however, ascertained that it is a myotic. Used in a 1 per cent. solution, dropped into the conjunctival sac, there is experienced a feeling of warmth in the eye; some tears and spasm in the lids follow. These symptoms of irritation last but a minute, and frequently a shorter time. After the spasm of the lids has passed away there is noticed a conjunctival, or, more properly, a bulbar hyperæmia, and a slight superficial injection of the cornea which lasts but a few minutes. After five minutes myosis commences, which reaches its maximum after ten minutes and persists about thirty minutes, when the pupils show a tendency to return to their normal size, reaching it after seventy minutes. One and one-half hours after, slight mydriasis is noticed. The spasm of the ciliary muscle reaches its maximum in from one to six minutes, and then the refraction tends toward the normal, reaching it thirty-five minutes after the instillation.—*Therapeutische Monatshefte*, 1895, Heft vii. S. 364.

THE DIURETIC ACTION OF THEOBROMINE.

DR. HENRI HUCHARD believes that the future of therapeutics lies in the diuretics, because the permeability of the kidney is the safeguard of the organism, be it healthy or diseased, permitting the elimination of the toxins which it produces or it receives. The classification of Manquat divides diuretics into two groups, the mechanical and renal. The first group is further subdivided into (1) cardio-vascular and (2) aqueous. The second or renal diuretics are either (1) functional epithelial or (2) irritant epithelial diuretics. The functional epithelial diuretics are those which act upon the renal epithelium without altering it, and comprise milk, lactose, glucose, theobromine, potassium and sodium nitrates, asparagus, couch-grass, corn-silk, and elder-bark. The irritant epithelial diuretics are those which provoke diuresis by causing congestion of the kidney, as juniper-berries and cantharides. These give rise to real dangers, especially the latter, and should always be used with great care. The experiments with theobromine have shown that it does not possess any action upon the nervous system, thus differing from caffeine, which is a cerebral excitant. It is very slightly poisonous, even in large doses. It has a diuretic action less prolonged than digitalis, but more so than caffeine. This diuresis follows very rapidly as a urinary downpour; the amount of urine frequently becomes three or four pints. Very rarely it produces digestive disturbances, as nausea and vomiting, which may be avoided by prescribing the drug in capsules of seven grains each. It has no action upon the heart, arteries, or blood-pressure, and is harmless to the kidneys. It does not offer any danger of habituation nor of accumulation, and it is eliminated unchanged in the urine. Finally, it is indicated in dropsies of cardiac origin and in the anasarca of Bright's disease. If prescribed in the above dose, eight capsules should be taken on the first, six on the second and third, and four on the fourth day. To obtain the tonic effects of this drug it is employed in smaller doses, associated with equal parts of neutral sodium phosphate, for several weeks. Diuretin, sodium and theobromine salicylate are untrustworthy.—*Journal des Praticiens*, 1895, 2d semestre, No. 1, p. 5.

ACCIDENTS FOLLOWING THE USE OF SERUM.

GALLIARD reports that a woman, thirty-three years old, entered his hospital service, complaining of a slight angina, which, however, became suddenly worse, so that subcutaneous injection of Roux's serum was administered. There was no febrile reaction nor immediate accident, and convalescence was speedily established, so that she left the hospital five days later. Bacteriological investigation showed that the membranes did not contain the [Klebs-]Loeffler bacillus, but only staphylococci and streptococci. Sixteen days after the injection the patient returned with a polymorphous erythema and a serious acute polyarticular rheumatism, which yielded to three drachms of sodium salicylate within forty-eight hours. It is impossible not to attribute these cutaneous and articular accidents to the effect of the serum.—*Journal des Praticiens*, 1895, 2d semestre, No. 3, p. 45.

[Compare this report with the remarks of Winters, AMERICAN JOURNAL OF THE MEDICAL SCIENCES, vol. cx. p. 211.—R. W. W.]

THE CURATIVE ACTION OF TOXIN IN MALIGNANT TUMORS.

FAUSTO CAMPANINI presents a scholarly paper. He has made use of the toxins derived from a streptococcus culture to which bacillus prodigiosus was later added. The first patient suffered from a fibro-sarcomatous polypus of the naso-pharyngeal vault. The treatment gave rise to severe constitutional symptoms, resulting in great debility and anæmia, and was therefore abandoned without, however, having produced any change in the tumor. The second patient suffered from a large myxo-sarcoma of the breast. Twenty injections were given without giving rise to pain or general reaction, but inasmuch as they produced no effect the treatment was abandoned. Although the writer was apparently anxious to be convinced of the efficacy of the injections, the results obtained were not of such a nature as to merit confidence in them.—*Il Policlinico*, 1895, No. 13, p. 301.

THE PHYSIOLOGICAL ACTION OF EXTRACT OF SUPRARENAL CAPSULES.

DR. L. A. GLUZINSKI has found in his investigations of the extracts from various organs, *e. g.*, thyroid and thymus glands, liver, pancreas, spinal cord, and suprarenal capsules, that upon normal animals (guinea-pigs, rabbits, and dogs) the glycerin extract obtained from the suprarenal capsules possesses markedly toxic properties. Following the injection there appeared a paraplegia of the posterior extremities, a diminution of the sensibility of the same, while in the anterior extremities there were slight spasms, frequently a distinct opisthotonos, feeble respiration, dilated pupils, dyspnœic symptoms, and terminal general paralysis. Artificial respiration prolonged the life of the animal, providing that the heart was relatively good. The necropsy showed marked pulmonary œdema, ecchymoses, particularly in the pulmonary pleura and pericardium (in guinea-pigs), and the right ventricle and right and left auricles were strongly dilated in diastole and overfilled with blood. Apparently glycerin removes from the suprarenal capsules a substance which is extremely poisonous to the nervous system, influencing the medulla and spinal cord and producing death from pulmonary œdema. So far as investigation has now gone, the paralysis and changes in peripheral nerves and their end-plates are not to be recognized as analogous to those produced by curare.—*Wiener klinische Wochenschrift*, 1895, No. 14, S. 251.

THE USE OF THE THYROID IN THERAPEUTICS.

JORFIDA has made use of the thyroid gland in five cases of parenchymatous goitre. In two of these the tumor entirely disappeared, and in the remaining cases there was a notable reduction in size. Detailed reports follow, in which it appears that the amount used varied from twenty-eight to forty-five drachms, and the time required from nineteen to forty-three days. In four of the five patients there was a diminution of body-weight.—*Il Policlinico*, 1895, No. 13, p. 338.

Dr. Ferdinand Winkler carefully reviews the literature. The noticeable results in myxœdema are diuresis, diminution of the myxomatous swelling, lessening of body-weight, disappearance of weariness, stiffness, and apathy. In obesity a notable diminution of body-weight has been obtained, and may even be more marked than when dietetics alone are relied upon. Both the somatic and psychic phenomena of cretinism have been markedly benefited by the use of thyroid treatment. In tetany good results have been obtained by Gottstein. In Basedow's disease and acromegaly it apparently produced no good results. Of psoriasis a few cases were benefited, but lichen planus, lupus, eczema, urticaria, prurigo, and acne rosacea were not influenced. Menzies found great benefit from it in six cases of rupia syphilitica, and Abraham a marked improvement in two patients suffering from leprosy.—*Centralblatt für die Gesammte Therapie*, 1895, Heft vii. S. 385.

The Therapeutic Action of Salophen in Various Diseases.

M. Pierre Marie finds that this drug should be considered as a remarkable substitute for sodium salicylate, and possesses valuable properties in acute and subacute articular rheumatism, and appears to possess them in gout. It has no action upon chronic rheumatism. One patient suffering from the chorea of Sydenham was cured in eight days. The drug presents none of the inconveniences of sodium salicylate, and has been well borne by all the patients. Because of its decomposition only in the intestine it does not produce any gastric irritation, and its slow decomposition allows of a larger dose—to seventy-five and ninety grains. Usually forty-five to sixty grains only are required, and that in divided doses. On account of its tastelessness and insolubility it can be taken suspended in pure water.—*Les Nouveaux Remèdes*, 1895, No. 12, p. 272.

The Use of Olive Oil for Biliary Colic.

Dr. Michell Clarke reports three cases in which an initial dose of one ounce, which was rapidly increased, floated upon the surface of a bitter acid infusion, resulted in success. Eight grains of sodium salicylate, in a mild saline purgative, were also given before breakfast two or three times each week during the administration of the oil. The maximum daily dose of the oil was eight ounces, and the duration of the treatment from six weeks to three months.—*British Medical Journal*, 1895, No. 1802, p. 76.

The Treatment of Tetany.

Dr. R. K. Macalesher reports four cases. Recalling the observations of Vaughan, who obtained good results with quinine, even recovery in some cases in from eighteen to twenty-four hours, he made use of this remedy; but found that its effect was but palliative and temporary, not preventing frequent relapses. Phenacetin, however, gave equally favorable results. If the nutrition can be improved by the use of tonics and by appropriate dietetic hygienic measures, the disease can, it is believed, be radically and permanently cured. The method of Erb, the galvanic current, the stationary cathode being applied to the sternum and the anode to the spine and along the nerves to the affected parts, has still many advocates. In view of the occurrence of tetanic symptoms after removal of the thyroid body, Stieglitz suggests a trial of the administration of thyroid gland in ordinary cases of tetany.—*American Medico-Surgical Bulletin*, 1895, No. 12, p. 721.

THE TREATMENT OF INTERMITTENT FEVER.

DR. AUFRECHT does not offer any new remedy, but insists upon the administration of quinine hydrochlorate, in capsules, not in compressed tablets, three to four hours before the expected chill, in fifteen-grain doses for adults. When, from the action of the drug, a chill does not appear upon the day when it was due, it is well upon that day to administer three similar doses. For children the tannate may be substituted, but should be given in triple the corresponding dose. For stubborn cases of intermittent fever, which do not respond to the use of quinine alone, arsenic should be added. Two pills, each containing about one-thirtieth of a grain of arsenous acid, three-quarters of a grain of quinine hydrochlorate, two-thirds of a grain of powdered liquorice-root, should be given after each meal. If the spleen is enormously enlarged and the bodily strength greatly reduced on the days of the fever, there may be given in addition to the above-mentioned pills ten grains of quinine hydrochlorate three or four hours before the attack.—*Therapeutische Monatshefte*, 1895, Heft vii. S. 355.

THE ACTION OF NUCLEIN IN FEVER OR TOXÆMIA.

DR. WILLIAM JACOBSON has used this drug in the treatment of scarlet fever, measles, diphtheria, and follicular amygdalitis. In these cases he believes that it exerts an immediate, positive influence on the toxins in the system. So far as immunization is concerned, experiments have been made only in diphtheria, measles, and scarlet fever, which apparently can be prevented by the use of five minims given hypodermatically. Failures may occur when the organism has become thoroughly saturated with the poison, and nuclein, which is Nature's antitoxin, cannot overcome the poison. When the case is severe we are not justified either in depending upon nuclein alone nor in doing without it. Careful hygiene, diet, and watchfulness of the attendants will assist in saving the patient.—*New York Medical Journal*, 1895, No. 868, p. 71.

COLD BATHS IN TYPHOID FEVER IN OLD AGE.

DR. A. BALOGNESI believes that balneotherapy is the only method of treatment which can render service in the severe forms of typhoid fever. Its application is easy for the physician and for the intelligent nurse instructed by him. The expense is small; a bath-tub, bought or borrowed, and cold water, which is found everywhere. Since the dangers of typhoid fever occur especially in persons who have passed the age of forty the treatment should be commenced and systematically practised from the commencement of the disease; it is a preventive against complications and always shortens the duration of the disease and of convalescence. He begins by giving a sedative, calming tonic, and diuretic bath at 64.4° to 68° F., every three hours, which lasts twelve to fifteen minutes, with cold affusions over the medulla, at the beginning, middle, and end of each bath. If there is any sign of enfeeblement of the heart, kidney, brain, lung, or a physiological function which is necessary in the contest against the infection, the treatment should be increased; baths every two hours at 64.4° F., lasting from eight to ten minutes, with an affusion at 50° F. upon the neck during the progress of the stimulant bath. An ice-bladder can be placed over the heart and brain, and ice-compresses over the chest. This refrigeration should be continued until the accidents which threaten the life of the patient are rectified, and then the interval of the bath is lengthened to three hours, and their number progressively diminished until apyrexia is reached, the viscera are in good condition, and convalescence is established.—*Bulletin Général de Thérapeutique*, 1895, 24e liv. p. 530.

CHRONIC COFFEE-POISONING.

M. **GILLES DE LA TOURETTE** states that the symptoms very much resemble those of chronic alcoholism, with which it is confounded. Chronic poisoning is found more often in women than in men. The digestive disturbances are expulsion of mucus in the morning, vomiting, inappetence, and disgust for food; just as in alcoholism, so the immoderate desire for coffee ends in its being the sole article of diet. The patients become pale and jaundiced, which marks the coffee cachexia. Hæmatemesis has not been observed. The nervous phenomena consist of cramps in the calves of the legs, pain in the limbs; the reflexes are preserved; there is no coffee-paralysis. Many patients do not go beyond this stage of pain and are rapidly cured by the suppression of the coffee. Others, however, present trembling of the limbs, fibrillary twitchings of the lips and tongue, vertigo, and insomnia. On the part of the heart we note slowing of the pulse. The abuse of coffee is hurtful; it is well to recognize it and to be able to combat it.—*Journal des Praticiens*, 1895, 2d semestre, No. 3, p. 46.

THE STRYCHNINE TREATMENT OF VIPER-BITES.

MR. R. P. BANERJEE reports a single instance in which forty minutes after the bite upon the left foot one-fiftieth of a grain of strychnine nitrate, dissolved in twenty minims of distilled water, was injected into the left arm. In ninety minutes a second, and in an hour a third injection was given. The patient had deep sleep at night, the face and eyelids were puffy and swollen, the swelling of the foot was less, the urine was bloody. Five minims of the British Pharmacopœial solution of strychnine were given, which was repeated upon two consecutive mornings, in all one-sixth of a grain by the mouth. Strabismus, frontal headache, vomiting, diarrhœa, and delirium were noted. In spite of the considerable amount of strychnine which was administered no toxic symptoms were produced. The squint (external) in both eyes remained permanent, and if the patient looks at a glass he becomes giddy and falls if unsupported.—*The Indian Medico-Chirurgical Review*, 1895, No. 4, p. 273.

MR. JOSHUA DUKE tabulates thirty-seven cases of snake-bite. Mueller, who introduced the hypodermic use of strychnine for snake-bite, declares that its action is regular and prompt, and after a time stops entirely. The snake-poison develops regularly, but remains latent for some time, so that, when it has been apparently conquered for a time, it may suddenly start on a new course of symptoms. The strychnine-injections should not be employed until unmistakable symptoms of snake-poison are perceptible, for it may act so slowly that the patient succumbs before the state which requires and neutralizes the action of the strychnine has developed. The patient must be watched for twenty-four hours after the disappearance of the last symptoms in order to be able to combat, in time, a sudden relapse. Of the thirty-seven cases recoveries took place in 67.5 per cent. Of these cases eight were treated by Banerjee, all of which recovered; in some cases the amount of strychnine was enormous (three to four grains spread over four days).

The conclusions reached are that the hypodermic injection of strychnine is the only remedy to be relied upon; these must be carried out with boldness, but only after the symptoms of snake-poison have become pronounced. If a proper amount of snake-poison to counteract the strychnine is not present in the blood, the latter may itself cause death. If the patients are moribund when seen—*i. e.*, pulseless and respiration having ceased—the intravenous method may be adopted. Although experience proves much in its favor, the remedy cannot, at the present time, be considered a certain cure for the poison of all the colubrine and viperine snakes which inhabit the Indian peninsula.—*Indian Medical Gazette*, 1895, No. 6, p. 209.

POTASSIUM PERMANGANATE AS AN ANTIDOTE FOR OPIUM-POISONING.

DR. NATHAN RAW reports five cases, four of which recovered. In the remaining instance the patient had taken over a pint of the tincture of opium, and as the reporter was about, in addition, to administer a subcutaneous injection of the antidote, he suddenly died from respiratory paralysis. —*British Medical Journal*, 1895, No. 1802, p. 76.

COCAINE-POISONING.

DR. SCHEDE reports that a twenty-year-old muscular man received thirty drops of a 10 per cent. solution by injection into the urethra, preliminary to the passage of a sound. There immediately appeared symptoms of poisoning which were not influenced by the washing out of the urethra and bladder. The patient became unconscious, with completely dilated pupils, at first a tetanic spasm, then an interval of quiet, followed by a complete cessation of respiration, so that artificial respiration was practised. After a short interval the spasms were again repeated; during these the pulse became weak, although it formerly was strong. Camphor, amyl nitrite, and oxygen inhalations did not produce any effect. Soon there followed Cheyne-Stokes respiration with deep cyanosis, so that ten ounces of blood were removed by venesection. A renewal of the oxygen-inhalation was followed by a narrowing of the pupils. The spasms ceased after an intravenous sodium chloride transfusion. Seventy minutes after the first attack there appeared compulsory movements of the head and arms, twelve minutes later spasm of the right side, after ten minutes clonic spasms. Two hours from the commencement the urine was drawn; at this time the patient made masticatory movements of the lower jaw. The pulse, which at last had become better, was at this time smaller, so that the outcome appeared to be more unfavorable. Two and one-quarter hours from the beginning of the poisoning the patient showed the first reaction and gradually recovered consciousness.—*Therapeutische Monatshefte*, 1895, Heft vii. S. 370.

THE ACTION OF CADMIUM AND ZINC SALTS.

MM. ATHANASU and P. LANGLOIS, in making a comparative study of the physiological action of these salts upon the lactic acid fermentation, have found that the law of Richet holds, viz., metals of the same group act in proportion as their atomic weights. The salts of cadmium are more toxic than those of zinc (112 to 65). Lactic acid fermentation is arrested with 0.20 per cent. of cadmium sulphate and with 1.60 per cent. of zinc sulphate. The arrest of the heart in frogs is obtained with 0.105 *per mille* of animal-weight with cadmium and with 0.150 with zinc.—*Les Nouveaux Remèdes*, 1895, No. 12, p. 273.

MEDICINE.

UNDER THE CHARGE OF

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PLEURISY AND TUBERCULOSIS.

EICHHORST (*Correspondenz-Blatt für Schweizer Aerzte*, 1895, No. 13) makes a most important contribution to this subject. He tested the character of serous exudates in the pleura by injecting some of the fluid into the abdominal cavities of guinea-pigs. In the beginning he used an ordinary hypodermic syringe with a capacity of one c.cm. Out of eleven cases examined in this way only one caused tuberculosis in the test-animals. As the later histories of some of the patients revealed tubercular lesions, Eichhorst came to the conclusion that the experiments were faulty, and especially so in the amount of fluid injected. He therefore used a syringe having a capacity of fifteen c.cm. As before, strict asepsis was practised. Injecting this amount, he found that out of twenty-three persons who, apparently in perfect health, acquired pleurisy with serous effusion, fifteen, or 65.2 per cent., proved to be tubercular by the inoculation-test. That these figures are too low rather than too high follows from later histories of the cases. One patient, whose effusion gave a negative result, presented symptoms of tuberculosis of the lungs two months later. Eichhorst believes that in most cases the pleurisy follows tuberculosis of the bronchial glands, though in some cases it is primary. The author also gives the results of his observations on serous pericarditis. Out of twenty-seven cases, apparently spontaneous, eight proved to be tubercular. The author suggests that serous effusion in joints, the meninges, and the peritoneum may also often be tubercular.

In the discussion, Cérenville agreed with the author as to the frequency of tubercular pleurisy. He pointed out that in the latter the temperature is not usually so high as in the so-called rheumatic form. The prognosis is not always hopeless, as many cases remain free from further signs of tuberculosis. Socin pointed out the frequency of pleurisy in the history of cases of surgical tuberculosis. In his clinic 8 per cent. of such cases had a history of pleurisy, so that the later stages of such patients may escape the observation of the physician, but come under that of the surgeon.

THE ETIOLOGY OF ARTICULAR RHEUMATISM.

CHVOSTEK publishes a preliminary communication on this subject giving the results of some original investigations (*Wiener klin. Wochenschrift*, 1895, No. 26). Singer (*Ibid.*, No. 25) endeavored to elucidate the subject by examining the urine bacteriologically in seventeen cases of rheumatism. He found staphylococcus albus ten times, staphylococcus aureus once, streptococci three times, staphylococcus albus and streptococcus twice. From the constancy of their occurrence, the number of bacteria, and their disappearance as the symptoms lessened in severity, Singer was led to look upon the cocci as the cause of the rheumatism and to abandon the idea of the etiological unity of that disease. Chvostek had a different experience. He examined twelve cases, but with positive results in only three, finding in one case diplococcus, in another staphylococcus albus, and in the third a large coccus not hitherto described. This discrepancy in the results the author thinks was due to the methods used, Singer having cultivated organisms from the urethra, whereas Chvostek avoided this source of error by obtaining the urine from the bladder with aseptic precautions. He had positive results only in cases of sepsis and gonorrhœa, and came to the conclusion that the alterations of the joints in rheumatism are due, not to the direct action of bacteria, but to the effects of toxic substances—a view supported in his opinion by the results of injections of diphtheria antitoxin. The toxic substances may be produced, for example, in the intestinal tract, by bacteria not otherwise pathogenic. The cause of the alteration in the joints is probably complex. The anatomical structure of the joints, their unprotected situation and motion, all assist. So it is that the more exposed joints are more frequently involved. In some cases previous disease may have caused a predisposition. That micro-organisms can be found in certain joint-diseases the author does not deny, but he questions the applicability of the term rheumatic to these. Perhaps various kinds of bacteria are capable of forming the toxic substances, though it may be found that certain kinds, either from widespread distribution or peculiar properties, may preponderate. Various seats of infection may be admitted, though the tonsils and the intestines are probably the most frequent.

PRIAPISM IN LEUKÆMIA.

KAST (*Zeitschrift für klin. Med.*, Bd. xxviii. p. 79) reports the case of a man, forty-two years old, in whom priapism suddenly appeared without apparent cause. After two months the erection slowly subsided, leaving complete loss of sexual feeling, and never returned. At this time leukæmia was easily recognized by the greatly enlarged spleen and the condition of the blood—4,080,000 red to 960,000 white corpuscles. Six months later the patient died. It was found that the cavernous bodies had been the seat of extensive white thrombi, which had been followed by connective-tissue hypertrophy and induration, thus giving a mechanical explanation of this rare and hitherto obscure symptom.

THE PATHOGENESIS OF HÆMATOPORPHYRINURIA.

STOKVIS (*Zeitschrift für klin. Med.*, Bd. xxviii. p. 1) has investigated the relation of sulfonal to hæmatoporphyrin, various observers having shown that this body often appears in the urine during or after the use of sulfonal. Usually the condition comes on after long-continued use of the drug, though sometimes it appears early. Trional and tetronal have been observed to have the same results. In most cases death occurs, though the converse is not true, and hæmatoporphyrinuria is not present in all fatal cases of sulfonal-poisoning. As the origin of hæmatoporphyrin is quite unknown, Stokvis gave sulfonal to rabbits and dogs and examined the urine. In rabbits, on the second or third day after giving daily doses of 400 to 600 milligrammes per kilo, hæmatoporphyrin appeared. The amount varied greatly in different animals, and had no relation to the amount of sulfonal ingested. In dogs, after the ingestion of 65 to 120 milligrammes of sulfonal per kilo hæmatoporphyrin did not appear so early. If the drug were given daily, the animal soon died, the fatal dose being from 900 milligrammes to 2.4 grammes per kilo in rabbits, 2.6 to 3 grammes per kilo in dogs. The urine usually showed traces of albumin, hyaline and epithelial casts, and leucocytes. Bile coloring-matter could not be found, nor could glucose, although a reducing substance was present at times. Urobilin was present at times, as it has been in some cases of sulfonal-poisoning in man. Autopsies on the animals showed hyperæmia and hemorrhages in the mucous membrane of the stomach. The effused blood was almost black, and on being examined spectroscopically showed the lines of acid hæmatoporphyrin. Hemorrhages in the intestine gave a similar spectrum, though the blood and the other organs, with the exception of the liver and kidneys, did not. It was therefore probable that the hæmatoporphyrin was due to the action of acids on the effused blood. Further experiments proved this, and also showed (1) that the intensity of the sulfonal hemorrhages in the stomach and intestines varies greatly, (2) that the absorbed hæmatoporphyrin is partly retained in the liver, and (3) that another part is transferred in the liver or elsewhere into urobilin. The sulfonal probably acts as a corrosive poison after being split up in the body. It must be borne in mind that hæmatoporphyrinuria does not occur in all cases of gastric or intestinal hemorrhage. It is only when the blood remains long enough under conditions favorable for the change, and when the hæmatoporphyrin is present in large enough quantities to be excreted by the kidneys, that the condition can occur. In normal subjects the presence of hæmoglobin in the food may cause the excretion of hæmatoporphyrin—feeding starving rabbits with raw or cooked beef has the same effect, the hæmatoporphyrinuria coming on more promptly than after feeding with beef-blood.

Aneurism of the Hepatic Artery.

Mester (*Zeitschrift für klin. Med.*, Bd. xxviii. p. 93) reports a case in which a man of forty-two years was kicked in the abdomen by a horse. This was followed by pain in the hypochondrium, intermittent icterus, vomiting of blood, and the passing of fresh or altered blood by the rectum. The diagnosis was ulcer of the duodenum. Laparotomy was performed, but without revealing the seat of the hemorrhage. Nevertheless gastro-enterostomy was made. The patient died five days later. Autopsy showed a spurious aneurism of the right branch of the hepatic artery, in the liver-tissue, and communicating with the right branch of the hepatic duct. An analysis of the nineteen cases previously reported is given, from which it appears that the diagnosis is never made during life, the condition being mistaken for ulcer of the duodenum or gall-stone.

Acetonuria and Diabetic Coma.

Hirschfeld (*Zeitschrift für klin. Med.*, Bd. xxviii. p. 176), as the result of extensive researches, draws the following conclusions: In healthy persons the exclusion of carbohydrates from the food causes an increased excretion of acetone in the urine, amounting to from 200 to 700 milligrammes a day. Full albuminoid diet is followed by less excretion of acetone than moderate diet of the same kind. As the excretion of acetone is not influenced by the ingestion of fat it cannot be due to destruction of the body albuminoids. Even small quantities of carbohydrates (50 to 100 grammes) suffice to cause the disappearance of acetone in from two to four days, a diminution occurring within a few hours after taking the carbohydrates. Various carbohydrates, such as bread, cane-, milk-, and grape-sugar, mannite, and glycerin had similar effects; but alcohol, excessive muscular exercise, Carlsbad salt, sodium salicylate, and antipyrin had no such effect. The acetonuria of gastric disease, cancer, and fever is due also to insufficient carbohydrate food.

Pylephlebitis from a Foreign Body.

Kuhn demonstrated in the Biological Society of Amsterdam (*Centralblatt für inn. Med.*, 1895, No. 29, p. 714) the organs of a patient who died of liver-abscess. It was found that a piece of cocoa-palm fibre had perforated the wall of the stomach and penetrated the wall of the superior mesenteric vein. This caused phlebitis, which extended into the liver-tissue, producing the condition mentioned. It was diagnosticated during life as mesenteric abscess from retrograde embolism.

CHLOROMA.

OTTO SCHMIDT reports a new case of chloroma from the Pathological Institute of Göttingen (*Inaug. Dissert.*, 1895). The patient was a servant-girl, twenty years old. The disease began with pain in the shoulder, followed by the appearance of a hard, almost immovable tumor in the left axilla. The tumor was partially enucleated, part of it being inaccessible. About a month later a tumor appeared in the supraclavicular fossa of the same side, soon followed by others, some of which were removed. The tumor proved to be a malignant lymphoma. The blood showed slight increase of leucocytes, the variety increased not being mentioned, but examination six months later showed there was no leukæmia. Later, tumors developed in various parts of the body, hemorrhages of various kinds occurred in the skin; there was no hæmaturia. The liver and spleen were slightly enlarged. There was marked anæmia; red blood-corpuscles, 3,000,000; red to white, 600:1; hæmoglobin, 33 per cent. The diagnosis was sarcoma and hemorrhagic diathesis. Death occurred about six months after the beginning. Autopsy revealed hard, green tumors in the left axilla, with metastases in various organs and chloromatous change in the bone-marrow. There was, in addition, tuberculosis of the right axillary lymphatics, which were not greenish. Microscopic examination showed the tumors to be made up of cells resembling large lymphocytes in a fine reticulum. The tumors were of almost board-like hardness, with little juice on scraping. Hemorrhages were not present in them. The color was partly dark-green, partly grass-green, becoming paler on exposure to the air and in various hardening-fluids. No investigations were made into the cause or nature of the color, which the author thinks is due to the character of the cells. The author considers the disease to belong clinically and anatomically to the malignant leukæmic and aleukæmic lymphomata. An interesting fact is that the primary growth was not green, though histologically similar to the later tumors. Micro-organisms could not be found in the green tumors. Schmidt agrees with a suggestion made in this journal ("Chloroma and its Relation to Leukæmia," AMERICAN JOURNAL OF THE MEDICAL SCIENCES, August, 1893), that the case reported from Göttingen by Osterwald as one of leukæmia was also one of chloroma.

MALARIAL FEVER.

THAYER and HEWITSON, in their recent exhaustive monograph on "The Malarial Fevers of Baltimore" (*Johns Hopkins Hospital Reports*, 1895), come to the following conclusions:

Malarial fever is rare in Baltimore during the winter months, but becomes more frequent as the season advances, reaching a maximum in the month of September, the majority of all the cases occurring in August, September, and October.

Any differences between the susceptibility of individuals of different ages, and of the two sexes, depend, apparently, only upon the varying chances of exposure to infection. The relative susceptibility of the negro is by nearly two-thirds less than that of the white population.

We have distinguished three varieties of the malarial parasite:

1. The tertian parasite.
2. The quartan parasite.
3. The æstivo-autumnal parasite.

(1) The tertian parasite requires about forty-eight hours to accomplish its complete development, and is associated with relatively regular tertian paroxysms, lasting on an average between ten and twelve hours, associated almost always with the three classical stages—chills, fever, and sweating. Frequently infection with two groups of tertian organisms gives rise to quotidian paroxysms; rarely infection by multiple groups of organisms gives rise to more irregular subcontinuous fevers.

(2) The quartan parasite is an organism requiring about seventy-two hours for its complete development. It is rare in this climate, and is associated with a fever showing regular quartan paroxysms, similar in nature to those associated with the tertian organism. Infection with two groups of the parasite causes a double quartan fever (paroxysms on two days, intermission on the third). Infection with three groups of the parasite is associated with daily paroxysms.

(3) The æstivo-autumnal parasite passes through a cycle of development. the exact length of which has not as yet been determined; it probably varies very greatly from twenty-four hours or under to forty-eight hours or more, But few stages of the parasite are found, ordinarily, in the peripheral circulation, the main seat of the infection being, apparently, in the spleen, bone-marrow, and other internal organs. Infection with this organism is associated with fevers varying greatly in their manifestations. There may be quotidian or tertian intermittent fever, or, more commonly, more or less continuous fever, with irregular remissions. The individual paroxysms last, on an average, about twenty hours. The irregularities in temperature depend upon variations in the length of the cycle of development of the parasite, or upon infection with multiple groups of organisms.

We have not been able to separate two distinct varieties of the æstivo-autumnal parasites, though we feel that more investigation is needed on the subject. The cases of malaria in the spring and early summer are of the milder, more regularly, intermittent varieties (tertian and quartan fever), the severe æstivo-autumnal infections beginning to appear only in the later summer, and reaching their maximum in September.

The colored race, while showing a relative insusceptibility to malarial infection, is equally susceptible to the various forms. The infections which occur, however, are more apt to take a simpler, milder course—the single tertian cases, for instance, outnumbering the cases of double tertian fever.

The majority of all the cases of malarial infection in this climate depend upon the tertian parasite; these tertian infections form the vast majority of all the cases in the first half of the year, but occur throughout the malarial season. The majority of infections during the height of the malarial season depend, however, upon the æstivo-autumnal parasite.

The earliest cases of tertian infection are more commonly single in nature, while, as the season advances, double tertian infections become more common. Nothing in our experience has led us to believe that these varieties of parasites are interchangeable. They are, we believe, distinct varieties, though closely allied to one another biologically. Combined infections with parasites of different varieties may occur, but they are rare, forming less than 2 per cent. of all the cases which we have observed.

The crescentic bodies associated with the æstivo-autumnal parasite develop from the small hyaline forms. We have seen nothing to support the view of Mannaberg, that they are the result of conjugation. We have never seen sporulating forms which we believe to have developed from crescents. We are not as yet inclined to accept the view that these are degenerate forms; we believe that their true nature is still undetermined. The nature of the flagellate bodies which may develop in all types of malarial fever is not yet determined. The specific action of quinine upon these three varieties of the parasite is undoubted. It exerts its influence most strongly when the parasite is undergoing the process of segmentation, before the entrance of the fresh segments into new red corpuscles. It is best administered, then, just before the beginning of a paroxysm, if we wish to obtain the greatest effect with a single dose. The action is much more rapid and certain in the tertian and quartan fevers than in the æstivo-autumnal infections.

SURGERY.

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THE TREATMENT OF NEURITIS OF INFLAMMATORY TRAUMATIC ORIGIN BY FORCIBLE COMPRESSION.

DELORME (*Gaz. des Hôpitaux*, 1895, No. 1; *Cent. für Chir.*, 1895, No. 19) recommends, in cases of neuralgia that are due to a traumatism or wound and develop as ascending neuritis, a very simple procedure which he has found successful in the eight cases in which he has used it. The treatment consists in a very short, but very firm, compression of the part, and as an example of the method he gives the following as applied to a finger:

The patient either sits or lies down while the arm is firmly held. The affected finger is grasped by the surgeon between his two thumbs and index-fingers at the point where the scar is which produces the irritation, pressure is then made with all the force the operator can bring to bear. He begins at the most sensitive point and goes gradually over the entire region. Each compression lasts only a few seconds; if the pain is not relieved, the compression is again applied after a few minutes. Usually one compression suffices; sometimes it must again be employed on the fourth or sixth day afterward. The finger is placed in a compressive cotton dressing for eight days. The trophic changes disappear usually with the pain. He reports the case of a man, twenty-two years old, who had a very painful keloid in a scar on the neck; it was removed seven times. After two compressions the pain disappeared and has remained away two years. Hysteria must always be excluded.

One Hundred Cases of Radical Cure of Hernia.

Delorme (*Arch. de Méd. et de Pharm. Militaires*, May, 1895) reports his second and third series of fifty each of operations for the radical cure of hernia; he had one hundred operative successes out of the one hundred cases, but reports two deaths, one nine days after operation and the other three days; both were due to disease of the lungs, and he thinks only one can be ascribed indirectly to the operation. The sac was ligated with boiled silk. The parietal incision was united by interrupted sutures about one-quarter of an inch apart, approximating the two edges of the wound for about three-eighths of an inch on either side, thus shortening the abdominal parietes by about three-quarters of an inch. Besides this suture the pillars of the external ring were stitched, using two or three sutures, leaving just sufficient room for the passage of the cord. Drainage was never employed, and the author is completely satisfied with that method.

The dressing included the abdominal region, the perineum, and the thighs. The patients were kept constipated for eight, ten, and twelve days, when the first dressing was removed. He has found that this constipation does no harm to the patients, there is no elevation of temperature, no gastro-intestinal disturbance, no decrease in appetite, and the first stool is easily produced by glycerin injections, their volume having been diminished by an animal diet.

The Treatment of the Diffuse Form of Septic Peritonitis occurring as a Result of Appendicitis.

McBurney reviews in the *Medical Record*, New York, 1895, vol. xlvii. No. 13, his experience in the treatment of diffuse septic peritonitis occurring in the course of appendicitis. The paper deals entirely with those cases in which there has been either no protecting wall or only an incomplete attempt to localize the infection. The cases in which the abscess is limited by a firm wall of adhesions, almost without exception, do well after operation. The diffuse form of peritonitis most commonly begins in the pelvis, probably on account of its dependent position, which allows any free fluid in the neighborhood of the appendix to gravitate into its cavity. When this occurs an inflammatory boundary of adhesions scarcely ever forms to limit the spread of the process. After a few hours the fluid overflows the pelvis, and the infection is distributed far and wide throughout the peritoneal cavity. Until very recently these cases have been considered hopeless. A larger experience, however, and improved technique have resulted in a greater percentage of cures. The author reports twenty-four cases, of which fourteen recovered and ten died.

The use of the rubber drainage-tube in draining suppurating spaces in the peritoneum has been almost abandoned. If introduced at random among the intestines, it fails to accomplish its purpose, inasmuch as the end and lateral openings soon become occluded. For the purpose of draining the bottom of the pelvis a glass tube is the most satisfactory means. This should be supplemented with a strip of gauze within the tube. The best drainage in all parts of the body, the author asserts, is obtained by the use of dry absorbent material like gauze, and the more completely this material touches every point from which it is desirable to extract moisture the more perfect will be the drainage.

For irrigating the abdominal cavity hot sterile salt-solution, six parts to the thousand, is to be preferred. All chemicals which have a destructive effect upon the endothelium of the peritoneum should be avoided, inasmuch as the absorbing power of the peritoneum is thereby crippled. It is probable that no actively germicidal fluid can be introduced with safety into the peritoneal cavity, of sufficient strength to be of value in directly destroying the toxic products accompanying a septic peritonitis. What we may endeavor to accomplish is to remove completely the primary source of the sepsis, to wash away more or less thoroughly the secondary products, and to drain away the fluids left behind and those of post-operative formation.

In the cases reported the following technique has been employed. The incision has been large, from four to five inches long, and has been made as near to the anterior spine of the ilium and the outer part of Poupart's ligament as possible. After opening the peritoneum every effort has been made to remove at once with sponges all fluids in view. Then the appendix has been sought for, removed, and the stump cauterized. The character of the case has, of course, by this time been appreciated, and the fact noted that either no adhesions have existed, or that they were imperfect, or having existed that they have given away under the pressure of the fluid they restrained; in other words, that the abscess has ruptured into the general peritoneal cavity. Search has then been made for further collections of fluid, the pelvis being usually examined first, unless this has been clearly walled off by adhesions. Rarely has such wall been deliberately broken down, and only when tenderness at another point, or other sign, has led one to suspect secondary formations. In most of the cases the pelvis has been found more or less filled with a seropurulent, often offensive fluid. Where such collections exist the peritoneum on the intestines is always unnaturally injected. Then cautious search has been made in other directions for similar fluid accumulations. That is, a small sponge on a handle had been carefully pushed first in one direction and then in another, and closely examined for the presence of fluid. When all purulent or seropurulent products have been as thoroughly sponged away as possible, the washing process has begun, sterile salt-solution of the uniform strength of six-tenths of 1 per cent. being used as hot as can be comfortably borne by the hand of the operator.

The irrigation of the peritoneum is performed by pouring from a pitcher or glass flask enough of the solution to fill the pelvis. This is sponged out rapidly and a fresh supply poured in, and so on, until the fluid returns perfectly clear. After the pelvis is sponged dry a long glass drainage-tube is passed to its very bottom, a piece of gauze to facilitate drainage passing through the tube from end to end, a single strip of iodoform gauze is passed close beside the tube to the bottom of the pelvis. If the loin has been suspected and washed, iodoform gauze is passed upward outside of the colon as far as the kidney. If the general cavity toward the median line, or beyond, has been involved, the packing is introduced in strips from three to six inches beyond the wound in various directions among the intestines; finally the wound surrounding the stump of the appendix is packed with gauze, no suturing of any kind being employed. In the after-treatment stimulating enemata containing whiskey or brandy are employed until the stomach is able to bear fluid nourishment. The glass tube is cleansed as often as necessary, depending upon the amount of fluid which collects, and is usually removed at the end of twenty-four and thirty-six hours, a single strip of iodoform gauze taking its place. The dressings are changed as often as the condition indicates.

On the Surgical Treatment of Perityphlitis.

Under the above title, Hænel, of Dresden, publishes a contribution in the *Münchener medicinische Wochenschrift*, 1895, Nos. 13 and 14. The author includes the various inflammations occurring in the right iliac fossa, which in this country are usually described as appendicitis. Twenty-one cases are reported, of which eleven were observed for a more or less extended period. In seven instances an operation was performed for the evacuation of acute abscesses; in three cases the appendix was removed, and in one an abscess was opened on the left side also. The works of Sahli and Sonnenburg are referred to, which show that most cases of typhlitis and perityphlitis originate in disease of the appendix. Of one hundred cases of death from disease in the right iliac fossa observed, post-mortem, in the Münchener Pathological Institute, ninety-one resulted from appendicitis, and nine from perforation of the cæcum.

Sonnenburg divides appendicitis into the catarrhal and ulcerative or perforative varieties. In the event of the formation of an abscess the pus may gravitate to the lumbar region, or pass downward along the psoas muscle below Poupart's ligament, and reach the surface; or above, along the ascending colon, and form a subphrenic abscess. In one of the author's cases the pus passed behind the parietal peritoneum to the left side of the abdomen; it may also descend along the rectum.

The chief indications for operation, the author says, are the presence of pus, peritonitis from perforation, and recurrent attacks. The presence of pus, which, of course, demands operation, is not always easy of recognition. Neither the pulse, nor the temperature, nor the local swelling, presents in every case diagnostic evidence.

A comparison is drawn between the medical and surgical treatment of the affection, and while it is admitted that the great majority of the cases recover from the attack, it is stated that many of these suffer recurrence of the disease. It is as logical, therefore, to say that a patient has been cured by removing a cancerous breast because she leaves the hospital, as to say a person is cured of appendicitis because the attack is survived.

THE SURGICAL TREATMENT OF EPILEPSY, WITH PARTICULAR REFERENCE TO EXCISION OF THE CEREBRAL CORTEX IN IDIOPATHIC EPILEPSY.

EULENBURG reports (*Berliner klinische Wochenschrift*, 1895, No. 15) a case of idiopathic epilepsy relieved by excision of a portion of the motor cortex, and comments on the surgical treatment of epilepsy. The results of operation for epilepsy have not been, as a rule, very satisfactory.

The operative procedures that have been employed in epilepsy may be divided into two classes: the removal of foci of irritation in distant organs, and direct attack upon the seat of the functional disturbance in the brain.

In the latter group Sachs prefers simple trephining, and doubts the advisability of interfering with the brain. On the other hand, the author thinks it remarkable that so few cortex excisions have been performed. He considers the operation entirely rational. The cases best suited to the application of this method are those in which no definite pathological condition exists, but a purely functional alteration of the cortex is present.

A case of very severe, genuine idiopathic epilepsy is described, occurring in a man twenty-eight years of age. The attacks began when the patient was eleven years old, and were at first clearly localized to a small area of the cortex, involving the arm-centre on the left side of the brain. The operation consisted in locating this portion of the brain with Reid-Köhler's cranio-encephalometer, and removing the corresponding portion of skull with a chisel and mallet. The dura was opened, and the centre for the right arm located by means of a battery, and excised. The portion of bone removed was replaced. The patient could move the right arm the same night, but the next day it was paralyzed, as was the corresponding side of the face. Speech was also affected. Ten days later the arm could be moved freely, the face was nearly normal and the speech improved. There was some necrosis of the internal table, which made the healing very slow. This may have been a factor in the favorable result. There was no attack for seven months, but at the end of this time the epileptic attacks began to recur.

HISTOLOGICAL STUDY ON BONE-IMPLANTATION.

BARTH gives the results of his study of the implantation of bone (*Ziegler's Beiträge zur pathologischen Anatomie*, Bd. xvii.). The first portion of the work deals with the implantation of living bone, and the second portion with dead bone.

In regard to the implantation of living bone, the author says that the apparent vitality of the fragments is frequently only apparent. In reality they often undergo anæmia-necrosis, and are substituted by new bone-tissue. This may not be apparent to the naked eye, but the microscope shows it to be the case. The same is true in cases of fractures.

Dead bone seems to answer the same purpose as the living if it fills the defect properly, the formation of bone in each case taking place throughout the implanted portions of bone. With decalcified bone the case is different; the deposition of bone takes place only on the surfaces of the fragments.

Bone in which the animal matter has been destroyed by heat answers the same purpose. The beneficial influence seems to depend upon the presence of the calcium salts.

The author states that calcined bone placed in the soft parts, or even in the abdominal cavity, is followed by bone-formation.

THE RADICAL TREATMENT OF INGUINAL HERNIA IN CHILDHOOD.

BITTNER (*Archiv für klin. Chir.*, 1895, Band xlix. Heft 4) believes that there are many cases of hernia which are not curable by the application of a truss, and that the cure in many cases may have been brought about by preventing the further distention of the sac and its growth with the development of the individual. He believes operation preferable since (1) there are those which require the constant wearing of a truss; (2) there are herniæ which cannot be held up by a truss on account of the size of the external ring; (3) there are occasionally severe complications following the use of a truss in these cases; (4) trusses are to be avoided if possible, since their effect on the social and mental condition of the patient is frequently great; (5) in all cases of operation for strangulated hernia the radical operation should be done. The operation is very well borne by children, recovery taking place on the average in ten days. The author reports 34 cases with 38 herniæ, with one relapse and one death in a child that was found to be markedly tubercular. The operation was simple suture of the canal.

THE TREATMENT OF TUBERCULOSIS OF THE JOINTS.

RYDYGIER in a monograph (Wien, 1895) of sixty-four pages on this subject discusses the various methods employed in treating tuberculosis of the articulations, especially as seen in the six larger joints. The author holds a conservative position in regard to joint-tuberculosis. He draws the following conclusions as a result of his study:

1. Conservative orthopedic treatment is not to be considered as in competition with operative measures, but one supplements the other.
2. The particular method to be employed in a given case depends upon different circumstances: the means of the patient, the age and general condition, the local findings, and the joint affected.
3. The better the conservative orthopedic measures employed, the fewer will be the operations required.
4. If the joint contains pus in spite of conservative treatment, and if there is a tendency to further destruction of the joint, operation is needed.
5. The best method of conservative treatment is that which allows the patient to exercise in the fresh air, without irritating the joint.
6. The best operative procedure is that which permits a free and complete entrance into the joint, so as to be able to remove accurately all diseased tissue without undue regard for the future function of the joint. In some cases it is desirable to excise completely to secure anchylosis.
7. In the after-treatment of resected joints the patient should be got about as soon as possible.
8. Operation too long postponed is not to the advantage of the patient,

but if done too early may make the patient a cripple. The proper selection of cases should be made on an anatomico-pathological basis.

9. The general treatment should not be neglected, especially sea and other corresponding baths.

In treating tuberculosis of the hip-joint the author advises very prolonged orthopedic treatment and iodoform locally. It is desirable for the patient to walk about with an apparatus as soon as possible. The presence of pus and progressive destruction of the joint require operative interference. This may occur, the author says, in the most carefully treated cases.

In the case of dry caries of the shoulder, Rydygier advises early resection, as it shortens the course of the treatment and gives a better functional result. He is also inclined to early excision with removal of the carpus when the disease attacks the wrist-joint.

Regarding incisions, the author prefers the transverse incision for the ankle-joint with suture of the tendons, and the bayonet-incision of Ollier for the elbow.

THE MORTALITY OF 2658 CASES OF DIPHTHERIA.

In studying the cases treated during the past ten years in the surgical clinic of Berlin University, HIRSCH (*Archiv für klin. Chir.*, 1895, Band xlix. Heft 4) found that there was a mortality of 1396 cases, or 52.5 per cent., in 2658 cases. He found also that the greater frequency was in the months of October, while the least was in June, and in general the winter months were the most fatal. The mortality is greater the younger the patient, so that the younger the patient the worse is the prognosis. The mortality in cases in which tracheotomy was deemed necessary—*i. e.*, where asphyxia was threatened by laryngeal stenosis—was 68.7 per cent.; in cases not operated upon, 26 per cent. The statistics show that of 407 cases in children under two years, in whom operation was necessary, twenty-five recovered—that is, twenty-five patients were saved by tracheotomy from an otherwise certain death. The prognosis is bad in cases complicated by nephritis, and only slightly better in those complicated by scarlet fever. The statistics also show that the earlier the child was seen the better was the prognosis.

TRACHEOTOMY IN DEUX TEMPS IN A CASE OF DIFFICULT DÉCANULEMENT.

LEHAMANN (*Archiv für klin. Chir.*, 1895, Band xlix. Heft 4) details a difficult and interesting case of diphtheria in which décanulement was very difficult. The second tracheotomy was done in two stages; that is, the skin and soft parts were divided down to the trachea, the bleeding stopped, and the wound allowed to granulate before the trachea was opened and the tube inserted; infection of the wound was prevented by this means and healthy granulation surfaces secured that united more rapidly after the tracheal tube was removed. O'Dwyer's tubes were inserted under chloroform in the stenosed larynx, while a tracheal tube, which was cut so that it extended just through the wound, was allowed to remain in until the O'Dwyer tube was retained easily, and assisted greatly in producing the accommodation of the tube in the larynx.

THE INFECTIONS OF BONE, PERIOSTEUM, JOINTS, AND FASCIAS BY THE POISON OF INFLUENZA.

A very interesting and timely observation has been made by **FRANKE** (*Archiv für klin. Chir.*, 1895, Band xlix. Heft 3) concerning the forms of osteitis, periostitis, and inflammations of the plantar fascia and joints that accompany or follow attacks of influenza. He reports in detail twenty cases of very great interest. The disease manifests itself in the fascias, principally in the plantar fascia, which becomes thickened and sensitive to pressure, and renders standing and walking painful, while it is relieved on lying down. Another manifestation, the author believes, is seen in the condition described by Albert as "Achillodynie," where the insertion of the tendo Achillis becomes the seat of a periostitis without any definite history of injury or traumatism. The inflammation is most frequently seen in the bone and periosteum, where it may either produce simple œdema and swelling, or may go on to suppuration without resolution taking place. The involvement of fascias is next in frequency of occurrence, while instances of a pure arthritis of this description are very rare. The disease may manifest itself three or four days after an attack of influenza, or it may not appear for weeks after the attack. It is more liable to be found after a second attack or in patients who have been the subjects of a series of attacks. The stubbornness with which the disease resists all methods of treatment should lead one to suspect its etiology, and a history of previous attacks of influenza or indications of a concurrent attack should confirm the diagnosis. The best treatment is moisture, with warmth, followed by massage, with appropriate treatment in case of suppuration.

THE CURE OF CANCER BY SERUM THERAPY.

EMMERICH and **SCHOLL** (*Deut. med. Woch.*, April 25, 1895) in following up the discovery of various well-known authors, that erysipelas has a direct influence upon cancer when it arises concurrently with it, have demonstrated that anthrax can be cured by the use of a serum derived from animals infected artificially with erysipelas. This fact and the conclusion to be drawn from it, that the bacillus of anthrax was destroyed by some property of the serum within the blood of the patient, lead them to believe that the cure of cancer by erysipelas is to be attributed to a like cause, and that serum from infected animals would produce the desired result as well as the filtrate from virulent bouillon culture of erysipelas cocci, as used by Coley, and without the dangerous symptoms which accompany that method of treatment. In their experiments and clinical research they therefore employed a serum derived from sheep infected with erysipelas; this was drawn with aseptic precautions, filtered through the Chamberland or Arsonval bacterial filter, and the serum preserved aseptically in a darkened chamber till used. They obtained lasting results, whose clinical history they detail except in two cases, one of secondary infection and the other in which suppuration was going on, and in both of which the disease had progressed too far.

In their clinical research they found that the age of the cancer had more effect than the kind upon the result, but they believe they have found a specific for the disease and probably also for sarcoma. The dose varied with the size of the tumor and other conditions, especially the condition and age of the patient. Small tumors required fifteen minims to one drachm daily. Sometimes two drachms and even an ounce was injected at different points into the tumor. Small doses produced no pain of moment, while repeated injections produced pain that lasted only a short time. Large amounts injected into hard tumors caused somewhat greater pain, but it lasted only a few hours. Fever was absent except when large amounts were employed, and then was of moderate degree and short duration. There was no interference with digestion or appetite, nor was headache complained of by the patients. The injection produced a local aseptic erysipelas with slight redness and local œdema.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

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Inflammation of the Retina from Hereditary Syphilis.

J. Hirschberg (Berlin) calls attention to the practical importance of this form of retinitis (*Deutsche med. Wochenschr.*, 1895, No. 26). Careful examination shows it occurs about once in one thousand patients with eye disease, corneal inflammation from the same cause occurring in about six of a thousand of such patients. It frequently occurs with the corneal disease. He has observed it early in one-seventh of his corneal cases in the first year of life. He urges the need of a careful ophthalmoscopic examination in these cases.

Various forms of fundus-change are produced. More frequently than one should suppose from the literature, the periphery of the fundus is studded with light rose-colored and later whitish specks. Frequently one observes parti-colored or dark specks in the retina; not so important when they lie in the periphery, or at least not exactly at the fovea. In other cases the periphery is paved with light (atrophic) spots, the pigmentation of these spots being slight. Not rarely is encountered the picture of the so-called areolar retinitis, the round, light, pigment-margined spots strewn over the eyeground. In many cases the spots are of the various characters referred to; the various types are mixed.

An important fact, hitherto mostly overlooked, is that the development of the pigment-changes in the eye-ground may continue for years after the cure of the corneal inflammation. When the region of the macula is involved in these changes they exert an important influence on the acuteness of vision, and treatment then has only slight effect.

As to treatment, Hirschberg says the remedy is mercury; and he lays down this axiom: "Is the disease stubborn? so must be the surgeon." He orders inunctions of blue ointment 0.5 to 1 gramme daily, and exceptionally, where a speedy action is necessary, twice a day. These are given for five days; then a bath and an interval of three to five days; then repeat. From 100 to 300 inunctions are given, and the after-treatment continued for one to two years.

Asthenopia from Pressure of the Lids on the Cornea.

George J. Bull (Paris) in an elaborate paper on the effects of lid-pressure on the cornea (*Trans. Eighth Internat. Ophthalm. Congress*) calls attention to what may be termed "tarsal asthenopia." He points out that pressure of the lid-margins upon the surface of the cornea causes sufficient disturbance of the corneal surface to give rise to a very noticeable irregularity of the refraction of the eye. This may be demonstrated by looking at a point of light through a strong convex lens held far enough from the eye—nearly its focal distance—to form on the retina a large circle of diffusion. Across this circle of diffusion certain dark and light bands mark where the lid-pressure has been exerted. These bands are of two kinds, viz.: First, those produced very quickly and by slight pressure, and entirely effaced by winking; second, bands produced by more prolonged and severe pressure, which gradually fade away while the eye is held open, but which reappear or become more noticeable after winking.

The first he thinks are due simply to the displacement by the lid-margin of the viscous fluid coating the surface of the cornea. The second he believes are due to a disturbance of the curvature of the epithelial surface of the cornea itself; while the fading away comes from the filling of the inequalities with the viscous fluid, and the reappearance with winking by the wiping away of this fluid. When one eye was closed and the other kept directed forward for a minute or two the disturbance caused by the pressure of the margins of the closed lids was sufficient to cause the doubling of horizontal lines when the eye was again opened. Such a disturbance might readily arise in the eye of a person working with a monocular optical instrument, such as the microscope or telescope, until he learned to avoid it by keeping open the eye not in use. By firm pressure of the lid-surface on the cornea a network of markings similar in nature may be produced.

Bull believes that the disturbances of the corneal surface by lid-pressure may become a source of trouble, as in artists who practise the constriction of the lids known as *clignement*, or after prolonged use of the eyes in a constrained position, as looking down when reading in bed, which brings the margin of the upper lid where it will press on the cornea in front of the pupil. Such disturbances, he thinks, will be aggravated by anything causing dryness of the epithelial surface of the cornea. In some cases the wearing of correcting-glasses until the habit of lid-constriction, arising from ametropia, is broken up, will be followed by permanent relief, even though the correcting-glasses are subsequently not worn constantly or altogether discarded.

ANTISEPTIC PRECAUTIONS IN CATARACT EXTRACTION.

J. B. STORY employs the following (*Dublin Journal of Medical Sciences*, July, 1895): The eye to be operated on is kept bandaged with boric acid lotion-dressing for twenty-four hours before operating, and the operation is not performed so long as any mucus is present on the dressings. All the instruments are kept five minutes in boiling water, with the exception of the knives, which are sterilized by rubbing with a mixture of equal parts of ether and absolute alcohol. The collyria employed are made up with boiled boric acid solution, or with 1:5000 corrosive sublimate solution. The dressings are made with absorbent wool soaked in boiling boric acid solution. At the time of operation the patient's face, eyebrows, and lids are washed with creolin, and boiled boric acid lotion is used to wash out the conjunctival sac, both before and during the operation.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

J. SOLIS-COHEN, M.D.,

OF PHILADELPHIA.

PILOCARPIN IN DIPHTHERIA.

DR. LOUIS WALDSTEIN, of New York, has published (*Berliner klin. Wochenschrift*, No. 17, 1895) his observations upon leucocytes and their reactions to pilocarpin in diphtheria, streptococcic sore-throat, derangements of the lymphatic glands, tuberculosis, and lupus. Diphtheria presented the doctor with rich material for his investigations; and he examined the leucocytes at the height of the disease, both before and after the injections of Behring's serum. He found that before the injection of the serum, and during the entire period of the height of the disease, the multinuclear cells were more or less increased in number, sometimes fivefold, while the lymphocytes were as largely diminished; for example, 20,000:400. As soon, however, as improvement began this relation suddenly altered, the multinuclear cells falling to the normal proportion, and the uninuclear ones increasing, so that, if graphically represented, the two curves cut each the other.

If the case continued favorable, the relation remained the same with very slight deviations. Cases which did not improve exhibited, after the injection, an increase of the lymphocytes without any diminution in the multinuclear cells. This latter condition was in every case an unfavorable prognostic feature. Either the patient died, or the disease took a more or less chronic course with disease of the lymph-glands, or with ear-complications, or with other sequelæ. The contrary relation of the number of leucocytes showed no regular correspondence with the course of the fever or the character of the pulse, and did not appear to have any causal connection with the visible exudates. The only characteristic was the general condition; the children usually lay apathetic, and in many cases had to be nourished artificially.

In the post-mortem examinations of diphtheritic children Waldstein always found swelling of Peyer's patches and of the glands of the mesentery, and, not infrequently, acute disseminated miliary tuberculosis.

These reactions of the leucocytes to the disease led Dr. Waldstein to the use of pilocarpin for the purpose of artificially exciting the increase of the lymphocytes in the blood. The few investigations he has thus far been able to make appear to justify the continuance of its use, with a fair prospect of demonstrating its efficacy. He found that the hypodermic injection of pilocarpin in doses of from one to five milligrammes proved of great benefit in cases associated with streptococcic angina, the class of cases in which the serum so frequently fails by its want of action upon the cocci. In one case of pure bacillar diphtheria the pilocarpin had no influence and the serum had to be employed.

For various details in this connection, and in that of the action of pilocarpin on tuberculosis and lupus, the reader must be referred to the original article.

DIPHTHERIA.

DR. SOLOMON SOLIS-COHEN (*Philadelphia Polyclinic*, 1895, No. 7) reports a series of cases in the Philadelphia Institution for Feeble-minded Children, at Elwyn, Pa., in which, under his advice, guaiacol was successfully used, topically, as a prophylactic against diphtheria. The throats were painted twice a week with a 50 per cent. solution absorbed upon a small wad of cotton wrapped on a probe.

FIBRINO-RHINITIS.

DR. D. BRADEN KYLE, of Philadelphia, reports (*N. Y. Med. Journal*, July 6, 1895) two cases of laminated fibrinoplastic rhinitis, with the results of the laboratory investigation; and discusses, generally, the subject of fibrinoplastic exudates. In fifty-seven cases collated, fifteen showed the bacillus of diphtheria present in either a virulent or attenuated form. Bacilli were not found in eight cases; bacteriological examination was not made in six cases; and the diagnosis was based entirely on clinical data in the remaining twenty-eight; so that really but twenty-three can be critically utilized, of which eight, or a little more than one-third, revealed no diphtheria bacilli.

INTUBATION OF THE LARYNX.

DR. F. EGIDI, of Rome, has devised (*Supplemento al Policlinico*, 1895, No. 35) a new apparatus for introducing and withdrawing the tube which provides, by a perforation through one of the branches, for a continuance of respiration during the manipulations. Illustrations accompany the article.

ŒSOPHAGISM.

M. E. THIERCELIN (*France Méd.*, May 17, 1895) reports that in attempting lavage of the stomach on a nervous woman forty-three years of age, the rubber tube provoked tetanic contractions of the œsophagus so energetic as to prevent, for several minutes, the withdrawal of the tube. The same occurred on a second occasion, but less violently, and since that time the tube had been introduced without any reproduction of the spasm.

LARYNGEAL PARALYSIS.

Dr. G. Hunter Mackenzie reports (*Journal of Laryngology, Rhinology, and Otology*, 1895, No. 4) an interesting case of paralysis of the left vocal band in the cadaveric position, in the person of a type-founder sixty years of age, with evidences of old pleurisy at the right apex, and who had suffered from transitory melancholia five years previously. Within a short time symptoms of cerebral disease developed, from which the patient died within four months of the appearance of the laryngeal symptoms. Some fifteen or sixteen small tumors were found in the cerebrum which, on examination, proved to be malignant papillomas, yet there was no evidence of any direct implication of pressure upon the pneumogastric or spinal accessory nerve, the nuclei of which appeared perfectly normal. There was no peripheral pressure found upon either of these nerves, at the apex of the lung, or elsewhere, and the muscles of the affected side of the larynx showed no difference from those of the other side. The cause of the paralysis has, therefore, been undetected.

THE SURGICAL TREATMENT OF SUPPURATION OF THE ACCESSORY CAVITIES OF THE NOSE.

At the seventh annual meeting of the British Laryngological, Rhinological, and Otological Association, held in London, July 25 and 26, 1895 (*New York Medical Journal*, August 24, 1895), this subject was opened by **Dr. John N. Mackenzie**, of Baltimore, who expressed himself in accord with **Freeman**, of Philadelphia, who opens below the nasal duct. He did not approve of intranasal operations which required the removal of the inferior turbinate.

Dr. Luc, of Paris, discussed his operation for frontal empyema. It consists in exposing the anterior wall of the frontal sinus at the union of the eyebrow with the bridge of the nose, in curetting away the granulations contained in the cavity, and in destroying the greater part of the floor of the sinus with a chisel, in order to create a large communication between the sinus and the nasal passage. A curved probe is then introduced from the wound into the nose until it appears at the nostril, when a large rubber drain is fixed to its end and drawn from below upward into the sinus, where it is deeply lodged. The wound is then sutured, and antiseptic injections are made through the drain as required. The drain can be removed in a fortnight in acute cases, and after a month in chronic cases complicated with fungosities.

Dr. D. Bryson Delavan, of New York, confined his remarks to ethmoidal disease, and urged the necessity of conservatism in operative treatment, which should be based upon indications suggested by the anatomical and pathological conditions present. It should consist in thorough drainage, persistent cleansing of the several cavities of the sinus, persistent cleansing and disinfection of its interior, and the removal of offending tissues, which he performed with a series of fine and variously curved curettes, which he showed to the meeting.

Dr. F. H. Bosworth, of New York, dwelt on the more frequent implication of the ethmoid cells. He uses an electromotor and a burr three-sixteenths of an inch in diameter in these cases, taking several sittings, up to fifteen, to destroy all partitions, and had observed no ill effects.

Dr. Mayo Gullier described his operation for empyema of the frontal sinus. The incision was vertical and in the middle line, to enable him to explore both cavities.

The subject was further discussed by Dr. Daly, of Pittsburg; Dr. Dundas Grant, of London; Dr. Collier, of London; and Dr. Krause, of Berlin.

Laryngeal Stenoses of the Larynx.

In a paper on this subject, Dr. Charles E. Sajous, of Paris, formerly of Philadelphia, at the seventh annual meeting of the British Laryngological, Rhinological, and Otological Association, held in London, July 25 and 26, 1895 (*New York Medical Journal*, August 24, 1895), said that the infraglottic space had not received the attention its importance warranted as an inherent portion of the larynx. He cautioned against the administration of potassium iodide in cases of infracatarrhal stenosis, and insisted that preliminary tracheotomy should be performed before the administration of the drug in cases of advanced infraglottic stenosis.

Dr. Sajous then read a paper sent by Dr. Massei, of Naples, who emphasized the necessity of differentiating infraglottic stenosis. The hypoglottic tract was the most frequent seat of syphilis, tuberculosis, morbid growths, rhinoscleroma, and also foreign bodies.

The Surgical Treatment of Laryngeal Tuberculosis.

At the recent meeting of the British Laryngological, Rhinological, and Otological Association, held in London, July 25 and 26 (*New York Medical Journal*, August 24, 1895), Dr. Krause, of Berlin, read a paper in which he said that surgical treatment was necessary in all cases where tubercular ulcerations were complicated with advanced infiltration or granulation. Simple ulcers, or such as are surrounded with slight infiltration only, were best treated with lactic acid. High fever and debility formed no absolute contraindication to operative treatment, which sometimes even removed dyspnœa or dysphagia. The laryngeal lesions were sometimes cured entirely, and there was no relapse even while the pulmonary processes advanced to a fatal issue.

Dr. Gleitsmann, of New York, urged the necessity of the proper selection of cases for this treatment, which he believed improved the laryngeal lesion, and thereby increased the chances of cure of the pulmonary disease. It was certainly the surest and quickest way of curing dysphagia, and thus favored improvement in nutrition.

Dr. Heryng, of Warsaw, said that tubercle of the larynx might heal spontaneously, chiefly in cases of ulceration of the vocal cords and the posterior wall; very rarely in more serious cases. The chief indications in general treatment were hygienic, dietetic, and climatic. The most important indications were the removal of dysphagia and the relief of dyspnœa and aphonia. The cure of deep ulcers was best effected by surgical means. He dwelt upon the indications for surgical treatment, which, however, were not detailed in the report from which this record has been made.

THYROID EXTRACT IN MYXŒDEMA.

At the recent meeting of the American Laryngological Association (*New York Medical Journal*, August 24, 1895), DR. SHURLY, of Detroit, related a case in which, some fifteen years ago, Dr. McGraw had extirpated the whole thyroid gland in a case of goitre occurring in a boy sixteen years of age. This operation seemed to relieve the boy for about three years, and while he did not grow in stature, he had seemed to develop in other directions. Three or four years later Dr. Shurly had seen the boy again, having been asked to examine his larynx to account for the character of his voice, which had been very piping. The movement of the vocal cords and arytenoids was normal, but the tension was defective. From this time the boy had gradually developed into a state of myxœdema, and his mental faculties had not developed to any extent. Three years ago some thyroid extract had been injected into his neck, but without special benefit. Since that time he had been taking the thyroid extract quite continuously. In February last examination of the larynx showed the tension of the vocal cords to be much better. The boy's mental faculties were somewhat better, although the mind acted very sluggishly.

The case was of interest inasmuch as it pointed directly to the extirpation of the thyroid gland, and confirmed the experiments that had been made on the lower animals. Dr. Shurly thought the profession should use its influence against extirpation of the whole of the thyroid gland in the light of our present knowledge.

OBSTETRICS.

UNDER THE CHARGE OF

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THE PRACTICAL VALUE OF VARIOUS METHODS TO DETERMINE THE INDICATIONS FOR INDUCTION OF LABOR.

AHLFELD (*Monatsschrift für Geburtshülfe und Gynäkologie*, Band i. Heft 6) discusses the value of Müller's method for determining the indications for induction of labor, by pressing the head of the child into the pelvic brim. While this method has advantages, it is not to be relied upon solely. Ahlfeld prefers to estimate carefully the period of gestation, measure the length of the fœtal body within the womb, to compute the length and weight of the fœtus, and to combine these data with those given by palpation. It is also to be remembered that a fœtal head which cannot be pressed downward into the pelvis can be brought through after version, the breech preceding.

THE USE OF FORCEPS AS PRACTISED IN THE PRAGUE OBSTETRIC CLINIC.

SHICK (*Monatsschrift für Geburtshülfe und Gynäkologie*, Band i. Heft 6) gives the results of the use of forceps in 2920 labors. Birth was completed by forceps in 3.63 per cent. of cases. The majority of the cases were primiparal, between twenty and thirty years old. In 60 per cent. of cases the mother was lacerated. The maternal mortality was 4.7 per cent., while 11.32 per cent. of children perished. Of the mothers, 1.8 per cent. had septic infection. The conclusion reached from comparing the use of forceps with other methods of delivery is that the forceps is the bloodiest method of delivery, and that its mortality-rate renders it a serious procedure for mother and child. Other means of accomplishing delivery should be exhausted before recourse is had to the forceps.

THE CONDUCT OF NORMAL LABOR BY EXTERNAL EXAMINATION ONLY.

LEOPOLD and **ORB** (*Archiv für Gynäkologie*, Band xlix. Heft 2) report the results of the conduct of normal labor by external examination only in 1000 cases. Errors in diagnosis occurred in 65 (6.5 per cent.). Fifty-four of these were in occipital presentation, 2 in brow, 2 in breech, 1 in twin gestation; while in 6 cases of face-presentation an error was made in diagnosticating the entire number. In 168 cases contracted pelvis was diagnosticated. The writers show by statistical comparison of series of cases that palpation may be relied upon to determine a most important point—namely, the presence or absence of descent of the fœtus into the pelvis.

THE VAGINAL SECRETION OF NEWBORN INFANTS.

In the *Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxii. Heft 3, **VAHLE** gives the results of his examination of the vaginal secretion of newborn infants to determine the presence or absence of bacteria. He finds that for twelve hours after birth the vulva and vagina are sterile. From this time until the third day germs are occasionally found, and after the third day they are present in most cases. In 4 per cent. of cases staphylococci were discovered, while in 14.6 per cent. streptococci were isolated.

INTRAUTERINE INFECTION WITH TYPHOID.

FREUND and **LEVY** (*Berliner klinische Wochenschrift*, 1895, No. 25) report the case of a multigravida who was admitted to the hospital in the eighth day of typhoid, being five months pregnant. She progressed favorably until the fourth week, the temperature being but slightly elevated. Without apparent cause she expelled a living fœtus, which soon perished. Her temperature rose during labor, but fell immediately afterward. The fœtus and placenta were received in sterile glass vessels, and an examination made of the spleen, blood of the heart, and placenta twenty minutes after birth. No gross lesions were found. Typhoid bacilli developed, however, after incubation. An old endometritis was present in the mother, who speedily recovered.

The case is a remarkable demonstration of the direct passage of infection from mother to child, without anatomical lesions.

A CASE OF LONG RETENTION OF AN OVUM IN THE UTERUS.

ORLOFF reports in the *Prager medicinische Wochenschrift*, 1895, No. 22, an interesting case from the obstetrical clinic at St. Petersburg. The patient had borne ten children and came to the clinic with a history of icterus and vomiting of blood. There was also enlargement of the abdomen, and puncture was made to relieve the pressure-symptoms. A diagnosis was made of cirrhosis of the liver, with intestinal hemorrhage. The patient shortly afterward died, and upon post-mortem examination an impregnated ovum was found lying in the right horn of the uterus. The ovum had ruptured, and only the chorial sac remained. So far as the history and appearance of the tissues indicated the ovum had remained for more than a year within the uterus.

THE CHOICE OF CÆSAREAN SECTION, SYMPHYSIOTOMY, AND INDUCTION OF LABOR.

TARNIER, in *La Presse Médicale*, July 20, 1895, describes in a clinical lecture a case of symphysiotomy in which the antero-posterior diameter of the pelvis was less than 8 cm.

He reviews the results obtained by induced labor, and finds that in pelves whose antero-posterior diameter ranges from $6\frac{6}{10}$ cm. to $8\frac{6}{10}$ cm., in thirty cases, he had no maternal mortality, but 40 per cent. infantile death-rate. In forty-nine cases in which the same diameter measured from $8\frac{6}{10}$ to $9\frac{6}{10}$ cm. there was no maternal mortality, with $20\frac{29}{100}$ per cent. infantile mortality. In his third series of seventeen cases in pelves whose antero-posterior diameter measured from $9\frac{6}{10}$ to 11 cm. he had no maternal mortality, but an infantile death-rate of $29\frac{41}{100}$ per cent. He calls attention to the fact that the mortality-rate of children is less in the middle range of pelvic contraction, because pregnancy is interrupted in these cases after the end of the eighth month, at a time when the fœtus is well developed. The high mortality among children in the third series of larger pelves occurs because these patients call aid too late, when the child has become too large to pass favorably through the pelvis.

In comparing the results of induced labor and symphysiotomy one finds that in classes of cases in which interference is practised most often, namely, in those in which the antero-posterior diameter of the pelvis is between $8\frac{6}{10}$ and $9\frac{6}{10}$ cm., that the total mortality-rate of mothers and children in 200 cases was $20\frac{29}{100}$ per cent., while the best statistics of symphysiotomy give a mortality-rate of mothers and children of 33 for 200 cases.

Pinard's statistics give a total of $18\frac{36}{100}$ per cent. mortality-rate for 200 cases after symphysiotomy. The difference, however, between the results of induced labor and those of symphysiotomy does not serve strongly to recommend the latter operation.

Tarnier believes that induced labor will be the operation chosen in pelves whose antero-posterior diameter is more than 8 cm., and that symphysiotomy should be selected in appropriate cases with an antero-posterior diameter less than 8 cm. If the statistics for induced labor are taken for cases divided into two classes in this way, it is found that in pelves above 8 cm. there was no maternal mortality, and an infantile death-rate of $24\frac{77}{100}$ per cent.

In pelves below 8 cm., with no maternal death-rate, the infantile mortality was $57\frac{14}{100}$ per cent.

A Fœtus with Absence of Urethra and Ascites Obstructing Delivery.

In the *Transactions of the Obstetrical Society of London*, 1895, vol. xxxvii. No. 1, **Stevens** reports the case of a male fœtus of about seven months, delivered by embryotomy. The forceps was applied to the head, but as the fœtus was macerated the neck was broken by the traction employed. It was found that the body completely filled up the pelvis; the thorax was opened with scissors and the diaphragm was cut through, when $3\frac{1}{2}$ pints of fluid, clear and straw colored, escaped. On examining the body the urethra was found to be absent; while the bulk of the fluid was ascitic, some was pleuritic and pericardial. There was general œdema.

GYNECOLOGY.

UNDER THE CHARGE OF

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Regeneration of the Endometrium after Curettage.

Werth (*Archiv für Gynäkologie*, Band xlix. Heft 3) has made by far the most scientific contribution on this subject which has yet appeared, based as it is upon extended microscopical studies. His practical deductions are of corresponding value. He calls attention to the fact that the mechanical results of curettage vary widely according to the manner in which the operation is performed. The surface is naturally scraped unevenly, portions of the mucosa being left intact at some points, while at others the subjacent muscular tissue is removed. The most thorough results seem to be obtained when both the curette and the sharp spoon are used, especially the smallest-sized instruments, which can be inserted into the cornua of the uterus and between the rugæ. The writer does not attribute so much importance as others to the unfavorable influence of little islands of intact mucosa upon the regeneration of the new endometrium, since he has found that they are quickly surrounded by the new epithelium and even seem to lose their abnormal character.

The question of recurrence of the diseased condition after curettage is of primary importance. Where there is marked glandular hyperplasia, the glands dipping down into the muscularis, early recurrence is apt to follow the most vigorous scraping, unless the raw surface is thoroughly cauterized at once. But, since these cases cannot be distinguished clinically from others, it is safer to cauterize in every instance. In every instance in which liquor ferri was applied after curettage, an examination of the specimens showed that the regeneration of the epithelium was delayed. Moreover, when islands of diseased mucosa are left the application has the effect of destroying them.

Attention is called to the fact that there is no analogy between the regeneration of the endometrium after curettage and the physiological process which follows menstruation.

VESICULAR MOLES IN THEIR RELATION TO MALIGNANT DECIDUAL NEOPLASMS.

FRAENKEL (*Ibid.*) concludes that a considerable proportion of the malignant growths which develop from the chorionic villi and decidua were originally retained vesicular moles. In sections of the latter commonly one finds outgrowths of the syncytium and the subjacent cellular layer of the chorionic villi, which are histologically similar to the elements found in the malignant neoplasms before mentioned. It is highly probable that the latter originate from such outgrowths in the remains of vesicular moles. The practical deduction is that moles are less innocent than has heretofore been supposed, and that not only should they be carefully examined in every case, but the patients should be kept under observation after their removal.

DISINFECTION OF THE HANDS.

REINIEKE (*Ibid.*) after a series of elaborate bacteriological examinations arrives at the following conclusions: Absolute sterilization of the infected hands with the chemical solutions generally employed is practically impossible in the time usually allowed for that purpose. The most certain method consists in scrubbing the hands with soap and hot water for five minutes, then scrubbing for the same length of time in 90 per cent. alcohol, and finally immersing them in an antiseptic fluid. If rapid disinfection is desired, they may be scrubbed for five minutes in alcohol.

SECONDARY HEMORRHAGE FROM THE PEDICLE.

TAIT (*Medical Press and Circular*, July 3, 1895) defends the Stafford knot, which, it has been claimed, is not absolutely reliable. While he does not believe that any ligature is perfect, he affirms that the knot can always be depended on if the following precautions are observed: 1. If the pedicle is long and round, it should be tied as far from the uterus as possible. 2. In passing the ligature a cutting-needle must never be used, and veins should always be avoided. 3. The "slack" of the knot must be taken in by drawing upon the ends several times, then after securing the first hitch the pedicle is divided, the second hitch being secured at the end of the operation, after retightening the first. 4. The division of the pedicle is a most important detail, to the neglect of which many cases of slipping are due. The writer emphasizes the fact that it makes little difference how much tissue is left on the distal side of the ligature; a short-cut pedicle, and especially one that is divided straight across, is always dangerous. If it is thin and broad, it should be divided as in making the flaps in an amputation.

Membranous Dysmenorrhœa.

Duke (*Medical Press and Circular*, July 10, 1895) has met with satisfactory results with the following treatment: The os externum is scarified at intervals of three or four days between the periods; just before the flow is expected the cervix is dilated, the interior of the uterus is thoroughly curetted, and a spiral wire stem is introduced, which is worn continuously during at least three subsequent periods, the patient being directed to take hot vaginal douches even when menstruating. No harm has resulted from the use of the stem, and the patient is able to attend to her ordinary duties.

Normal and Pathological Positions of the Uterus.

Mackenrodt (*Archiv für Gynäkologie*, Band xlviii. Heft 3) summarizes a paper on this subject as follows: Contrary to the usual statement the pelvic fascia is not perforated by the vaginal canal, but surrounds and sends off to the cervix and vagina firm bands, those attached to the latter forming with it the strongest point of resistance to the abdominal pressure. The cervix uteri is so attached by the pelvic fascia as to occupy the position of slight anteflexion seen in the embryo. This normal flexion takes place in the cervix, the corpus uteri being inclined forward, while its axis remains perfectly straight. The uterus is kept in a position of anteversion by its ligaments, but remains passive, in the direction of the upper portion of the cervix. Its own weight and the intra-abdominal pressure also assist the organ in maintaining its normal position. The perineum offers only a slight resistance to the intra-abdominal pressure. The real support of the uterus in its normal position is afforded by the attachment of the pelvic fascia to the cervix. Hence the deduction that the true cause of posterior displacements of the organ is to be sought for in relaxation of this fascia. In prolapsus the same condition is present plus atrophy of the muscles forming the pelvic floor, which may be due as much to general as to local causes.

Papillary Growths of the Ovary.

Pfannenstiel (*Ibid.*) concludes an elaborate paper on this subject with these practical deductions: The clinical history and prognosis of these neoplasms vary greatly. While papillary parovarian cysts and hydrops folliculi are quite innocent, ovarian sarcoma and carcinoma of the papillary variety are extremely malignant. Between these extremes stands papillary adenoma, the prognosis of which is favorable, provided that the entire tumor is removed and there are no metastases on the peritoneum. Even when portions of the tumor are left behind, the progress of the case to a fatal termination is slow. On the other hand, a considerable proportion of these papillary cysts are primarily carcinomatous. Malignant degeneration of a true adeno-papilloma is by no means so common as has been stated. Removal of the tumor without delay is the only proper course to be pursued, since we cannot certainly tell beforehand whether it is malignant or not; even in the case of a growth which is histologically benign the development of secondary masses in the peritoneum must render the prognosis less favorable. Contact of the fluid with the peritoneum during the operation should be avoided, and explorative puncture is especially reprehensible. The opposite ovary should be removed in every case of this nature, even when it is microscopically normal, since there is great probability that if left it will also become the seat of a papillary growth. The urgent wish of the patient expressed before operation should alone induce the surgeon to vary from this rule.

THE OVARIES IN OSTEOMALACIA.

ROSSIER (*Ibid.*) made careful examinations of the ovaries in three cases in which castration was performed for the cure of osteomalacia. To the naked eye they showed nothing abnormal except general hyperæmia. Microscopically the stroma and follicles presented a normal appearance, but in the cortical substance the vessel-walls were hypertrophied and were the seat of extensive hyalin degeneration. Whether this points to a peculiar condition of the blood or not is mere inference. As regards the etiology of the disease, the writer regards Fehling's explanation as the most plausible, that it is a tropho-neurosis of the bones due to some reflex influence originating in the ovaries.

CHANGES IN THE FEMALE GENITAL ORGANS IN BASEDOW'S DISEASE.

THEILHABER (*Ibid.*) from personal observation in several cases infers that in certain individuals who are predisposed to morbus Basedowii it may result from pathological conditions of the pelvic organs, while, conversely, disturbances of these organs may be directly due to the disease itself. Pregnancy, hemorrhages, and operations, especially castration, may be etiological factors. Atrophy of the uterus and adnexa may result, as shown by the fact that menstruation is always scanty or absent. That more cases have not been reported is doubtless due to the fact that few patients have been carefully examined with the view of determining this point. This atrophy is due to vasomotor influences, and not to anæmia, as is usually stated. In a case of the writer's, atrophy of the uterus preceded the usual signs of the disease. With improvement in the patient's condition the organ may return to its normal condition, as in cases of hyperinvolution during lactation.

As a practical deduction from the foregoing the writer states that young women with Basedow's disease should be advised not to marry, while the married are warned that the course of the disease may be unfavorably affected by pregnancy and the puerperium, and that the children which they bear are likely to be highly neurotic. Atrophy of the genitals demands no treatment, which, in fact, is useless. The prognosis is not hopeless, since their functions may be restored with an improvement in the disease. Local treatment is only required in the rare cases in which the existing anæmia is increased by profuse uterine hemorrhages, when curettage is indicated. Neoplasms should, of course, be dealt with according to the usual rules.

Castration for the cure of Basedow's disease has been advocated by Blocq, but there are no scientific grounds for its support.

SARCOMA DECIDUO-CELLULARE.

LAUNEN (*Ibid.*) describes a case of this rare neoplasm in which he diagnosticated the condition by the examination of tissue removed with the curette, and extirpated the uterus successfully a few days later. Seven months after the operation the patient was perfectly well and had gained twenty pounds in weight. This case was the fifth in which a radical operation had been performed, but only the second in which the patient was still living. The diagnosis was made from the history of a previous pregnancy and abortion, irregular hemorrhages and foul discharge, accompanied with septic symptoms, vomiting, and cachexia. On examining the uterine cavity with the fingers a soft neoplasm could be felt, portions of which were removed and examined microscopically, when the diagnosis was confirmed by finding processes of decidual cells which invaded the muscle-fibres, thus proving the malignancy of the growth as well as its decidual origin. The writer concludes that while one may not succeed in removing a specimen for diagnostic purposes which presents such a typical appearance, the clinical history will at least make it clear that a malignant intrauterine growth exists, and that total extirpation is accordingly indicated.

PÆDIATRICS.

UNDER THE CHARGE OF

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LEAD-PALSY IN CHILDREN.

NEWMARK (*Medical News*, May 11, 1895) reports a case of lead-paralysis in a girl of six years, who had been exposed to the drug by sleeping in a crib which had been painted with a mixture containing white lead; this covering of paint was very slow in drying, requiring many months, and the patient was in the habit of scratching it off with her finger-nails. The blue line on the gums was well marked. There was bilateral wrist-drop; on the right side all the muscles supplied by the radial nerve were paralyzed, except the triceps and supinator longus; on the left side the triceps, supinator longus, and abductor pollicis longus were preserved. Fibrillary twitchings were absent, but a jerky tremor was observed. The triceps-reflex was present in each arm, sensibility was intact, and the affected muscles gave complete reaction of degeneration.

The patient was able to walk, but she occasionally stumbled, owing to failure to clear the ground completely, for there was bilateral ankle-drop. She could, however, extend the proximal phalanges of the toes quite well, this movement being the only one that could be executed by muscles supplied by the external popliteal nerve. The tibialis anticus was also affected, and all the affected muscles showed the reaction of degeneration.

The case illustrates the fact signalized by Putnam that in children it is the rule for the legs to be "affected as much as the arms, or more, as in paralysis from alcohol and arsenic, the symptoms generally appearing first in them." It is also to be noted in this case that, although the arms and legs were equally affected, functional recovery took place much earlier in the former than in the latter. Chapin, in two cases, and Sinkler, in one of his three (*Medical News*, July 28, 1894), made the same observation; and according to Newmark's study no case has been found where the disorder persisted in the upper extremities after the lower had completely recovered.

HYPERTROPHIC CIRRHOSIS WITH CHRONIC ICTERUS IN THE CHILD.

GILBERT and FOURNIER (*Revue Mensuelle des Maladies de l'Enfance*, July, 1895, p. 309) report seven cases of hypertrophic cirrhosis occurring in children or adolescents, the *début* of which dated back to ages varying from five and one-half years in the youngest to seventeen years in the oldest of the cases described, thus indicating that the disease is not excessively rare in childhood. In general characteristics the clinical picture of the disease in the child differs in no essential from that presented in adult age. There is the hypertrophy of liver and spleen and the deformations which are thus produced, the jaundice with its train of secondary symptoms, the same absence of ascites, and the maintenance, for a long time, of the appetite and general health. There are, however, some special points of distinction to be noted in the author's cases. In three of these the hypertrophy of the spleen greatly exceeded that occurring in the liver, so that while the latter organ was found to extend only one or two fingers' breadth below the false ribs, the spleen filled the entire left flank, reaching the umbilical line and descending well into the pelvis. Such a disproportion between the liver and spleen does not occur in adult cases, and this feature in the cases under discussion is thought to pertain especially to childhood and adolescence.

Another peculiarity in three of the cases was found in certain nutritive changes in the bones of the phalanges of fingers and toes, and in the extremities of other bones—alterations which have not been hitherto described in connection with this disease. In the first case the distal phalanges of the fingers and those of the great toes were enlarged to resemble a drum-stick; the lower extremities of the femurs and both ends of the tibiæ were also enlarged, and the knee-joints were painful and contained a small effusion. In the second case the wrists and the tibio-tarsal articulations were quite painful. In the third patient the lesions were confined to the distal phalanges of the fingers, but were well marked. In these cases the lesions resembled those described by Marie under the name of *ostéo-arthropathie hypertrophiante pneumique;* but a like explanation could not here be invoked, since in the second case these lesions were very marked, while the hypertrophy of the liver and spleen was too slight to interfere sufficiently with the activity of respiration.

A third point to which attention is directed is the retardation in development manifested by such patients. This was especially noticeable in a youth of nineteen years, whose disease began at seventeen years of age; his height and weight were much inferior to those of most young men of his age, being about the average of a boy of fourteen or fifteen years; he was beardless, and upon the pubes and in the axillæ the hair was rudimentary; the limbs were slender and the muscular system weak.

RAYNAUD'S DISEASE IN A CHILD WITH HEREDITARY SYPHILIS.

KRISOWSKI (*Jahrbuch f. Kinderheilk.*, 1895, Bd. xl. S. 57) reports a case of local asphyxia and symmetrical gangrene in a child of three years of age suffering from hereditary syphilis. For three months previous to his first observation local asphyxia of the fingers and tips of the ears occurred whenever he was taken out into the open air. The parts became cadaveric in hue during the exposure, and then, after returning to the house, took on a violaceous tint, which after some hours gradually gave place to the normal coloring. The reaction was, as is usual, attended with considerable pain. These paroxysms had occurred for two months, when, after an exposure, the discoloration of the ears did not subside, and vesicles appeared upon the superior border, to be succeeded by plaques of gangrene the size of a bean, occupying upon each ear a symmetrical area of the superior border and extending upon the concave face of the pinna. The skin alone was involved. Taking into consideration the diathesis of the patient, the author began specific treatment (mercurial inunctions and potassium iodide), which produced a rapid cure.

HYDRONEPHROSIS OF CONGENITAL ORIGIN IN A CHILD.

MARTIN, of Geneva (*Revue de Chirurgie*, 1895, No. 4, p. 324), reports the observation of a boy of two and one-half years brought to the hospital for a progressive enlargement of the abdomen. A rounded tumor occupied the left hypochondriac, umbilical, and hypogastric regions, and extended several fingers' breadths beyond the median line. The growth appeared distinctly limited and separated from the liver by a furrow. Fluctuation was distinct. Puncture with the aspirator-needle gave issue to 600 grammes of clear, transparent fluid containing urea and cellular elements of the kidney. Nephrectomy was accordingly done. The cystic tumor, about the size of a child's head, contained about a litre of liquid. The opening of the ureter was found at the lower portion of the sac. It was exceedingly narrowed, scarcely permitting the passage of a very fine probe, and passed very obliquely through the wall of the sac. To this excessive narrowing of the ureter the author attributes the causation of the hydronephrosis.

MULTIPLE ANGIOSARCOMATA IN A NEWBORN INFANT.

KAREWSKI (*Revue Mensuelle des Maladies de l'Enfance*, July, 1895) reports the unique case of a newborn infant that presented over the entire surface of the body small, soft, subcutaneous tumors, which had no connection with the bloodvessels or nerves. These growths gradually increased in size until at the age of four months they reached the size of the infant's fist; the skin covering them was marked with dilated bloodvessels. One of the tumors, extirpated for examination, rapidly recurred; sections of the growth showed the structure of an angiosarcoma. Though the child had developed normally up to this age, a marked degree of leucocytosis had existed for some time, the white corpuscles numbering three times the normal. The author regards the case as demonstrating that sarcoma may take its point of origin from the adventitious tunic of the bloodvessels, a question which up to the present has been in dispute.

RETROPHARYNGEAL ABSCESS SUBSEQUENT TO MUMPS.

HAND (*Archives of Pediatrics*, July, 1895) reports a case of mumps in a boy of twenty-two months, the subsidence of the parotid inflammation being followed by enlargement of the lymphatic glands at the angles of the jaw, by an extremely irregular fever, and by intense anæmia. No cause could be assigned for the persistent temperature-elevation, which followed the hectic type, until about two weeks after the onset of the parotitis, when the presumptive diagnosis rested between tuberculosis and retropharyngeal abscess. Physical signs of either disease, however, were wanting, but attacks of cyanosis and trouble in swallowing now began to be noticed. The pharynx, except for slight catarrh, exhibited no abnormality, and continued so for eleven days longer, when after an interval of forty-eight hours between visits a fluctuating swelling was observed nearly occluding the pharynx. Incision of the abscess was followed by rapid subsidence of symptoms, convalescence being interrupted only for a day by incipient mastoiditis.

The case is noteworthy for the slow development of the abscess, since the process in children is rarely prolonged beyond a week. In Hand's case a hectic type of fever was recorded for fully three weeks, and no cause for it could be assigned until the abscess rather suddenly made its appearance.

SUPPRESSION OF URINE IN DIPHTHERIA.

WILDE (*British Medical Journal*, May 11, 1895) records three cases of pharyngeal and nasal diphtheria in which death resulted from suppression of urine. The observation is of interest as bearing upon one of the objections recently raised against antitoxin, since two of the cases were treated before antitoxin was in general use, and the third, although clinically indistinguishable from true diphtheria, was not bacterioscopically confirmed, and the patient therefore was not injected.

Few deductions, the author remarks, can be made from such a small series of cases, but certain features were present in all three. The type of the disease was very severe, and there was evidence of a general systemic infection against which the most active treatment was of no avail. The nasal cavity was implicated in each case, and pallor, languor, and debility, with the physical signs of peripheral paralysis, were prominent. In two of the cases the supervention of anuria occurred in the afebrile period of the illness, and it was accompanied by profuse diarrhœa and vomiting. It was of gradual onset, and the urine obtained before total suppression contained a considerable quantity of albumin without casts. The marked elective incidence of the diphtheria virus on peripheral nerve-tissue, and the fact that a local diminution of the renal blood-pressure leading to suppression may be produced by paralysis due to nervous injury, led the author to attribute the cause of anuria in these cases to nerve-degeneration. Moreover, the frequent association of an intractable and copious vomiting and diarrhœa might indicate a profound interference with the functions of the abdominal sympathetic system, leading to the blood-flooding of the splanchnic area and the consequent lowering of the renal blood-pressure to the point at which urinary filtration can no longer occur.

TREATMENT OF EMPYEMATA IN CHILDREN.

EDMUND CANTLEY, of London (*International Medical Magazine*, 1805, iv., No. 5, p. 329), publishes his deductions in regard to the treatment of this interesting condition founded upon the records of eighty-six cases under twelve years of age, most of which were treated in St. Bartholomew's Hospital from 1883 to 1893. Of these cases no less than eighty-four were instances of unilateral effusion. The patients had been under the care of seven different physicians, and the surgical treatment was carried out by a much larger number of surgeons.

The author believes that the assertion that the chances of perfect cure are better under treatment by resection is not supported by clinical experience, since in the present series it is found that of the patients thus treated more were discharged with a sinus than in the case of those treated by incision. The duration of time during which the sinus is kept open depends upon the length of time the tube is kept in; this depends mainly upon the fancy of the operator. Early contraction of the side is more likely to follow resection than incision. The indications for resection, he states, are as follows: 1, where the ribs are so close together that it is impossible to drain the cavity without it—a condition that rarely occurs in children and only likely to be found in long-standing cases; 2, when drainage is found subsequently to the simpler operation to be imperfect, the indications consisting in a high temperature and an offensive discharge; and, 3, when the lung has re-expanded and the chest-walls contracted, and yet the sinus does not close; resection of portions of several ribs is generally required in such cases.

In cases of double empyema the best treatment, according to the author's conclusions, is simple incision and drainage, allowing an interval of a few days to elapse between the two operations. More particularly, in cases of double general effusion, he thinks it better to aspirate first on both sides in order to diminish the quantity of fluid and relieve the heart from the encumbrance to its action. Next day operation should be made on one side, and a few days to a week later upon the other side. The left side should be chosen for the first operation, and local rather than general anæsthesia employed.

In cases of general effusion on one side and localized effusion on the other, evacuation of the general effusion should be first done, and the operation repeated on the other side a few days later.

Finally, in cases of double localized effusion, simultaneous drainage may be adopted, but, though not necessary, it is a wise precaution to wait a few days between the two operations.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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The Stomach-contents in Carcinoma Ventriculi.

Since examinations of the stomach-contents for diagnostic purposes began to be common it has been the constant effort of clinicians to discover some sign characteristic of carcinoma of the stomach which would make possible its early diagnosis, while operative procedure might still be attempted with reasonable assurance of success. The absence of hydrochloric-acid production in carcinoma of the pyloric extremity was early observed, and, until a similar change was found to occur in cases of simple atrophy of the gastric mucous membrane, was regarded as of much significance in the diagnosis of the cancer.

In 1892 attention was called by Boas to the fact that, though in other forms of gastric disorder lactic acid might be present in the stomach in small amount, it was produced in any considerable quantity only in carcinoma. While later researches have confirmed this observation they have shown that lactic-acid production is not a constant phenomenon of carcinoma; that its absence should not be considered incompatible with the existence of cancer in any particular case; and that its excessive production can only occur in the absence of hydrochloric acid and when the motor activity of the stomach is impaired.

Study of the lab-ferment, of pepsin-production, and of the occurrence of ordinary fermentative processes has yielded nothing as yet characteristic of carcinoma, and, excluding the rare cases in which fragments of the tumor have been discovered, the same may be said of microscopic examinations.

In a recent article in the *Deutsche medicinische Wochenshrift* (1895, No. 5, 73) Oppler discusses the relations of the various phenomena observed in carcinoma of the stomach, and attempts their classification in the various stages of the disease and in different locations of the tumor. He has furthermore particularly investigated the relation to carcinoma of *sarcina ventriculi* and of certain long, slender bacilli frequently found by him in the stomach-contents in such cases.

The first of these micro-organisms, *sarcina*, is usually described as a frequent ingredient of the gastric contents of carcinoma, but this Oppler denies. He has repeatedly introduced *sarcina* in pure culture into the stomach in carcinoma cases, and has always in advanced cases noticed its disappearance in the course of twenty-four hours. In two cases *sarcina* was found early in the disease while hydrochloric acid was still present, but suddenly disappeared a few days later when hydrochloric acid ceased to be present and lactic acid began to be formed in considerable quantity. Coincident with the disappearance of *sarcina* was the appearance of long, slender bacilli, which had been absent as long as hydrochloric acid continued. These soon became very numerous, forming long chains and masses, almost filling the interstices between the fragments of undigested food.

These observations are believed by Oppler to throw much light upon the processes occurring in the stomach in carcinoma. The ability of *sarcina* to develop in the presence of hydrochloric acid is well known. Its presence, then, during the early stages of the disease depends upon diminished motor activity of the stomach and consequent stagnation of its contents. In later stages, after the disappearance of hydrochloric acid and the establishment of the lactic-acid fermentation, the conditions are favorable to the development of the slender bacilli above referred to, which multiply rapidly and displace the sarcina. Thus, while *sarcina* may be present in the early stages of carcinoma, it is invariably absent later in the disease. Since these changes depend for their production to a considerable degree upon the existence of diminished motor activity of the stomach, they are usually observed earlier in the course of the disease when it is located in the pylorus than when its site is elsewhere in the gastric wall.

Oppler would accordingly formulate the conditions in carcinoma of the stomach as follows:

1. In cases of preserved motor activity (as, for example, in carcinoma of the curvatures or walls), hydrochloric acid is often absent, occasionally lactic-acid fermentation, particles of the tumor and bacilli are found; *sarcina* never.

2. When the motor activity is decidedly impaired hydrochloric acid may be either present or absent.

a. When present (as in the early stages of cancer of the pylorus) *sarcina* may be found, but never lactic-acid formation nor the slender bacilli.

b. When hydrochloric acid is no longer present (as in the later stages of carcinoma of any portion of the stomach) lactic-acid formation is pronounced, and with it large numbers of the slender bacilli. There is a tendency to gas-formation. Sarcina is always absent.

The conditions enumerated under 1 and 2, *a*, may pass into those of 2, *b*, as the disease progresses.

SUPPURATIVE PAROTITIS CAUSED BY THE TYPHOID BACILLUS.

To the list of suppurative processes complicating typhoid fever, in which the typhoid bacillus alone has been found as the cause of the abscess-formation, JANOWSKI (*Centralblatt f. Bakt. u. Parasitenkunde*, 1895, xvii., No. 22, 785) has recently added a case of suppurative parotitis.

The patient, a young man, had been sick in the hospital seven weeks, during which time he had greatly emaciated; had had more or less fever, and toward the last had developed hemorrhagic nephritis and a tender enlargement of the right parotid gland. The diagnosis of typhoid fever was first made on the autopsy-table, Peyer's patches showing distinct appearances of recently healed ulceration. The right parotid gland was found to be infiltrated with pus, which was in places collected in small abscesses. Cultures from this pus developed only the typhoid bacillus, whose identity was carefully proved by comparison with known cultures of the typhoid bacillus and of the *bacillus coli communis.*

As has been repeatedly observed in connection with suppurative processes due to the *bacillus typhosus*, the progress of the complication was slow, so that the parotitis became fully developed only after the termination of the primary disease.

Those cases of suppurative parotitis occurring in connection with typhoid fever, which have heretofore been examined bacteriologically, have been found to be due to the ordinary pyogenic bacteria, *staphylococcus pyogenes aureus* and *streptococcus pyogenes*, or to have contained one or the other of these germs in association with the typhoid bacillus. Janowski's is the first case in which the *bacillus typhosus* has been found alone.

A METHOD OF QUICK EXAMINATION OF PATHOLOGICAL TISSUES FOR DIAGNOSTIC PURPOSES.

It is very often desirable to be able to make a diagnosis of tumors and other pathological tissues at the time of operation or as soon thereafter as possible. Many difficulties have attended the employment of frozen sections prepared in the ordinary way, but by a slight modification of the procedure CULLEN (*Centralblatt Allg. Path. u. f. Path. Anat.*, 1895, vi., No. 11, 448) has been able to obtain well-stained and satisfactory sections in fifteen minutes.

Frozen sections are first made, and are collected in normal salt-solution. They are then immersed for five minutes in a 50 per cent. solution of formalin, for three minutes in 50 per cent. alcohol, for one minute in absolute alcohol; then washed in water and stained in hæmatoxylin and eosin after the ordinary method; are dehydrated, cleared, and mounted in balsam.

The difficulty attending this method is that the blood is lost. By a somewhat longer process this may be avoided. Small pieces of the tissue to be examined are immersed in a 10 per cent. solution of formalin for two hours. Frozen sections are then made, and are carried through 50 per cent. alcohol, absolute alcohol, water, hæmatoxylin, etc., as before.

These methods have yielded good results at the laboratory of the Johns Hopkins Hospital, and are well spoken of by Prof. von Kalhden, of Freiburg.

HEREDITY AND TUBERCULOSIS.

KUTHY (*Pester Med.-Chirurg. Presse*, 1894, No. 51) has attempted by a statistical study of 432 cases of tuberculosis to determine the influence of heredity in the etiology of that disease. In 23.8 per cent. of the cases one or both parents had the disease; in 11.5 per cent., the father; in 9.9 per cent., the mother, and in 2.4 per cent. both parents.

As control he inquired very carefully into the family history of 108 non-tubercular patients. Of these, 28.5 per cent. gave a history of tuberculosis in the parents.

Bearing in mind the great tendency of inherited tuberculosis to show itself early in life, Kuthy investigated all the cases of tuberculosis with regard to the time of their beginning. In only 7.2 per cent. did the disease develop before the thirtieth year.

From these statistics Kuthy infers that heredity plays but a subordinate *rôle*, if any, in the causation of tuberculosis, both as regards direct transmission of the germs of the disease and in the induction of the necessary predisposition. It is not an important factor in its etiology.

[Though these statistics are interesting and the conclusion arrived at is suggestive, they are open to the grave criticism of being derived from a too limited class of cases, leaving out of account entirely the great prevalence of tuberculosis in young children.]

The Examination of Sputum for Tubercle Bacilli.

Spengler (*Deutsche med. Woch.*, 1895, No. 15) recommends the employment of pancreation for the digestion of sputum preparatory to its examination for tubercle bacilli. The procedure is as follows: Equal parts of sputum and lukewarm alkaline water are thoroughly mixed with from 2 to 15 grains of pancreatin, and are allowed to digest at the body-temperature for from two to three hours, when a few drops of strong carbolic acid are added to prevent putrefaction. A sediment quickly forms. The supernatant fluid is poured off, fresh alkaline water is added, and a further digestion in the incubator is allowed. The sediment after this second digestion is smaller. It is collected on filter-paper and is examined in the usual way for the *bacillus tuberculosis*.

By this method the sediment from a day's sputum is so small, as a rule, that a few cover-glass preparations only are needed for its thorough examination. There is no impairment of the staining qualities of the bacilli, and Spengler has found this a very quick and reliable method of examination when the tubercle bacilli are present in small numbers. It is, of course, unnecessary when they are abundant.

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ETIOLOGY AND TREATMENT OF CERTAIN KINDS OF COUGH.

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Cough is one of those symptoms we are called upon constantly to treat. At times the diagnosis of its cause is relatively easy, and our treatment satisfactory. It may last, it is true, for some days despite our efforts to relieve, and during this time cause moderate annoyance, or even considerable distress. Still, after a fair trial of remedies judiciously employed a measure of benefit is obtained, and both patient and physician are hopeful as to a speedy cure, and both are tolerably satisfied with the amount of success accomplished in a given period. Again, there are cases in which we know from the first that whatever treatment may be followed the obstinate cough, in the nature of things, must persist, and arrest, except from increasing doses of anodynes, can rarely be effected. Such cases we are familiar with in certain forms of pulmonary and laryngeal phthisis.

There are other kinds of cough which are also met with quite frequently; yet their diagnosis is made with difficulty, and their treatment, despite repeated changes, fails to accomplish much in the way of abatement and cure. This is true not only of the patients who go first to the family physician in search of help, but also of those who in the beginning of their trouble gravitate toward some prominent specialist.

In the class of cases where the general practitioner is usually at fault I would place the cough which is under dependence of an engorged lingual tonsil. On at least two occasions I have treated wives of prominent medical practitioners who were sufferers from annoying symptoms of this origin, although previous to my seeing and treating them the nature of the trouble had not been recognized. In these cases there was no chest affection and no apparent throat trouble sufficient to cause the distressing cough, or other symptoms. There was no evident local disease elsewhere in one case; in the other there were joint symptoms of rheumatic gout. In one case the cough had resisted many usual remedies given internally, and the repeated employment of sprays and inhalation of balsamic vapors.

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[1] Read before the Climatological Association, June 14, 1895.

The cough in these cases is frequent, dry, paroxysmal. Anodynes, even in moderately large doses, fail to afford relief. At times the cough is occasioned by the sensation of a foreign body lodged at the base of the tongue, like a bristle, a bread-crumb, or a bit of meat, but it is impossible to dislodge anything or get rid of the annoying sensation.

Accompanying the cough there may be a continuous desire to swallow constantly, and the effort of deglutition may be performed with some difficulty. Indeed, I have had one case under my care in which the difficulty of swallowing was so great as to excite much apprehension lest choking should occur, and the young woman soon lost flesh and strength to a marked degree, through dread of taking her meals. With the difficulty of swallowing there may be a feeling of a constricting hand around the throat, which occasionally seems as if it would throttle the patient. This sensation is greatly increased when the patient lies down at night, and of course increases his terror.

But these are very exaggerated cases, and frequently nothing betrays the evidence of local irritation of the larynx from lymphoid hypertrophy at the base of the tongue, except an almost continuous cough. I have known such cases to be regarded for some time as phthisical, and again as hysterical.

When the obstinate cough is thought to be evidence of incipient phthisis, change of air, absence from business or household cares, cod-liver oil, and creosote begin to loom up as the only remaining means of helpfulness. If the patient be supposed to suffer from hysteria—and how often is the so-called "globus hystericus" made to account for what is caused by pressure from an offending mass—little or no treatment is insisted upon. The patient is often spoken of as an imaginary sufferer, for whom a cold douche, valerian pills, and some moral education sum up about everything which can be done.[1]

When these cases are examined with the laryngoscope, and it is only with the laryngoscope that they can surely be made out, we note the following conditions: The epiglottidean fossa, *i. e.*, the fossa between the epiglottis and the base of the tongue, is more or less completely filled up and distended by a slightly irregular but rounded mass of lymphoid tissue. This mass is sometimes deep red, sometimes pink, and again pale in color. It is often covered with irregular cauliflower excrescences not larger than a very small pea. Again, it is relatively smooth and glistening like certain forms of enlarged faucial tonsils in children. The mass may simply fill the fossa, pressing against the entire anterior surface of the epiglottis; or it may be so much larger on one side than it is on the other that the pressure on the epiglottis is only partial, and on the opposite side to the one where this is evident the fossa is not wholly filled up. Frequently the free border of the epiglottis is, to a more or less considerable extent, caught in or covered by the overtopping tonsillar mass; and it would seem to be particularly this portion of the mass which occasions the troublesome cough. When the patient phonates the mass occasionally separates from the free margin of the epiglottis; occasionally it shows no separation at all, but adheres under vocal efforts closely to it.

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[1] I am more inclined to the belief than ever that the nervous cough of adolescents described graphically by the late Sir Andrew Clarke was simply a cough caused by an enlarged lingual tonsil.

Frequently there are quite large veins distinctly defined on the tonsillar mass, and not seldom these veins will burst and allow more or less blood to come into the mouth and be expectorated, which I have known to cause the liveliest apprehension on the part of the physician and the patient. Fortunately, the bleeding soon stops, and the patient is none the worse for it, except mentally.

These enlargements of the lingual tonsil are uncommon among young children; they are also infrequent among young men and women; but toward middle life, in men and women, I have had numerous cases—more among women than men.

The causes of the enlargement are certain menstrual derangements, continued constipation, and an underlying rheumatic or gouty state. No doubt, micro-organisms may infect as readily, perhaps even more easily, this tonsillar mass than they do those masses at the faucial entrance.

In rare cases syphilis has doubtless localized itself in this region, either causing marked hyperæmia or a congestive condition, upon which a mucous patch may readily develop, as it does upon the faucial tonsils.

How should we treat this engorged lingual tonsil? Internally, we must give the salicylates in fairly large doses, and usually we shall obtain from their use very evident benefit. It is not essential in giving the salicylates to be able to discover some other manifest rheumatic symptoms; nor, indeed, should we feel compelled to obtain a clearly rheumatic history. Despite the absence of either the one or the other, we often get good results from this treatment.

In prescribing salicylic acid or the salicylates, it is very important to get salicylic acid obtained from the proper chemical source. That made directly from the oil of wintergreen is the only one which is safe and judicious to use. The other is very apt to cause pain and nausea, or other symptoms of stomachal intolerance. While I believe sprays of some benefit, especially those of carbolic acid combined with the essential oils and boric acid, still these will not cure by themselves the lingual hypertrophy. Local applications of a stronger kind are necessary. Among these, I place foremost the galvano-cautery and compound tincture of iodine.

Excision of the tonsil by a specially devised knife or guillotine (Chappell's) has been recommended highly by a few prominent throat specialists, but thus far has not commanded general favor. The site of the disease makes it awkward for operation with the guillotine unless it be imperatively required, and the risk from annoying bleeding, or some other accident following excision, is not, in my judgment, as small as has been affirmed. Formerly, I treated these cases with repeated applications of the galvano-cautery, and, upon the whole, my results were gratifying; still, owing to the soreness and swelling which lasted for several days subsequent to the use of the cautery, I had reason occasionally to be troubled in mind.

I do not remember to have had an abscess from the peritonsillar structure after cauterization, but I know that several times the tonsil was so much inflamed that I sought relief for my patient through repeated lancing with a curved knife.[1] The great objection, however, to the use of the cautery in this region is the risk of burning the epiglottis, and particularly its free border. Unless the patient is phlegmatic and obedient, and holds himself very steadily, we may inadvertently produce an ugly sore which will give any amount of trouble before it heals.

Latterly, by repeated applications of compound tincture of iodine to the tonsillar mass with a curved brush or sponge-holder, and by the use of the salicylates internally, I have been able in a few weeks to reduce these enlarged tonsils so that they ceased to occasion cough or other symptoms of local distress. The applications of iodine may be repeated daily with considerable advantage, or as frequently as can be made without causing marked local soreness. Even when the cough disappears, or the obstructed deglutition is no longer present, the voice may be more or less hoarse and discordant for some time.

In using the galvano-cautery it must always be borne in mind that an unfortunate burning of the margin of the epiglottis may bring on a cough even more troublesome than the one we are trying to cure, and for this reason, after considerable experience, I am inclined to reserve its use for those cases in which internal treatment and the local use of compound tincture of iodine remain without curative effect.

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[1] I have had two cases under my care in whom an abscess formed in this tonsil, and after causing great distress, *i. e.*, dyspnœa and choking, burst spontaneously, to the great and immediate relief of the patients.

Another form of cough occurs in young children, and is often ignored, or, if not ignored, the treatment is at least ineffectual, as it does not reach the cause of it. Frequently children cough repeatedly, and at night especially, on account of one of two conditions: either there is a dropping of thick mucus, or muco-pus, from the nasopharynx upon or into the larynx, or there is an irritation of the posterior turbinated bodies brought on by local congestion. The first condition is made evident frequently by the examination of the pharynx with an ordinary tongue spatula. So soon as the tongue is moderately depressed the child has an effort of gagging, and a large mass of mucus is seen between the free border of the palate and the pharyngeal wall, squeezed downward by the forced effort which just precedes its appearance. Usually this condition in children is due to more or less development of the pharyngeal tonsil or lymphoid tissue at the vault of the pharynx. It can be cured by a moderate scraping with the finger-nail of the right index-finger introduced behind and above the soft palate. If the finger be properly protected by a thick rubber nipple (*i. e.*, such a one as is used to cover the mouth of a nursing bottle) it will not be wounded by the child's teeth. No anæsthesia is required. The pain from the scraping is very slight, and the operation lasts but a few moments. To be thorough, two or more scrapings should be made at the time, or if the child is very restive after the first operation further interference may be delayed until a later and more favorable occasion. In some of these cases there is quite an amount of bleeding for a few moments during and immediately after the operation; but in my experience it has quickly ceased. If it were to continue I would advise swabbing the post-nasal space with a little of Mackenzie's tanno-gallic powder (three parts of tannin and one part of gallic acid). Indeed, I have made this application on more than one occasion as a simple matter of precaution, and with obviously a satisfactory astringent effect.

In the event of the hemorrhage being at all abundant or continuing for any length of time, the proper thing to do would be to place a plug of iodoform or sterilized gauze in the post-nasal space with the finger or a pair of post-nasal forceps, allowing a string to remain attached, so that the tampon could be removed at any moment it seemed advisable to do so.

For a few days subsequent to the scraping it is wise to spray the nasal and post-nasal passages with a mild antiseptic spray composed in part of carbolic or boric acid.

Sometimes there is really no adenoid tissue in the post-nasal space to account for the obstinate cough, and there is practically no hypersecretion of mucus or muco-pus from this region.

The nasal passages may be either tolerably pervious, or they may be notably occluded. Sometimes the occlusion is but little noticed in the day-time, but at night it becomes greatly aggravated, and especially when the patient is lying on his back, he is restless and uncomfortable, throws himself about in bed, coughs frequently, and yet apparently there is not sufficient evidence in an ordinary inspection of the fauces and pharynx to account for these morbid phenomena.

At times the cough is relieved very much for some time by a suitably formulated nasal spray or a few applications of moderate severity to the nasal mucous membrane.

I have found albolene with camphor and carbolic acid one of the best combinations as a spray or vapor, and applications of carbolic acid and glycerin (from 1 part to 8 to equal parts of each ingredient) as the most useful local application by means of a nasal carrier, I have hitherto employed in these cases.

Whenever the cough is not altogether relieved by these means used in the manner referred to, I find it is most useful to paint over the posterior end of the turbinated bodies (as much as I am able), and also the vault of the pharynx, with carbolic acid and glycerin (1 part carbolic acid to 6 or 8 parts of glycerin). In this way we are able surely to relieve the congested condition which is so distressing, and no doubt, by diminishing the sensitiveness of the peripheral nerve filaments here distributed, to cure the reflex attacks of coughs which have proved so distressing.

It is most important, however, in just such instances to avoid overloading the child's stomach at bed-time with heavy, rich, or, indeed, too abundant food. A light supper, mainly composed of bread and milk, with a little stewed fruit, is about all that such a child should be allowed to take at its evening meal. If the liver be engorged from a too large food supply, the result is temporary blocking of the circulation; and hence, in many cases, nasal obstruction and cough. Am I not borne out in my statement when many of us acknowledge that certain cases of frequent, obstinate nasal hemorrhage are only permanently arrested by a rigid dietary and repeated counter-irritation, or depletion over the hepatic region?

Just in the same way as a hyper-sensitive area may be discovered in some portion of the nasal passages or nasopharyngeal space, so I find occasionally sensitive areas in the pharynx, in the tonsillar region, upon the soft palate, in the hyoid, or epiglottidean fossa, which will occasion cough as soon as we touch the irritable point.

In what manner it is best to destroy these areas of cough is hard to affirm absolutely. Sometimes I have found one agent, sometimes another, relieve most. Nor is it always true that astringent or caustic applications will do better than soothing anodyne ones, or *vice versa.*

All local remedies at times remain futile, and cough persists and annoys until an entire change of air and scene are obtained.

Of the internal remedies from which I have derived most benefit, I would mention codeia and terpin hydrate. Codeia does not simply relieve hyper-sensitiveness for a while, it is also directly curative; moreover, it does not constipate the bowels much, as a rule, or upset the stomach, as morphine or opium almost invariable do. Terpin hydrate may have, in addition to its well-known modifying action on diseased mucous membrane, a mild antimicrobic power that perhaps is useful. It always remains true that codeia in doses of gr. $\frac{1}{10}$, more or less frequently repeated, and terpin hydrate in tablet form of 1, or 2 grs. each, every two or three hours, given internally, have been of great service in my hands.

I have not been able to determine invariably the cause of these sensative areas. I meet them occasionally in young girls of marked nervous temperament, who are also anæmic and somewhat exhausted from too much work, study, or pleasure. I also encounter them when the general health is excellent, and it is impossible to get at a satisfactory efficient cause.

Every practitioner is familiar, at least theoretically, with the fact that paroxysmal cough may be occasioned by irritation in the auditory canal. Most physicians have known the mere introduction of a probe or ear speculum to be followed by an outbreak of cough, which only terminated when the offending instrument was withdrawn. Sometimes the condition of the ear is such that we can readily account for cough produced by examination, or, indeed, for the cough which previous to the aural examination had remained a great mystery. Frequently, an impacted mass of cerumen explains the cough, apparently, and after complete removal of this substance the cough will speedily disappear.

There are numerous occasions, however, in which there are no impacted cerumen and no symptoms of aural disease prior to direct investigation by the physician. Then it is, and only then, that we first discover that there is some impairment of the auditory function. But what interests us particularly to state is that, one or more points of the auditory canal are especially sensitive, and appear to have some connection with the appearance or continuance of the cough. In any event, when the sensitiveness of the aural canal is diminished by suitable local applications, the cough tends to diminish or disappear. The point most frequently sensitive is that on the posterior inferior wall of the canal very close to the membrane of the tympanum. Accompanying this sensitiveness, there is pronounced redness of the surface of the canal, with slight furfuraceous exfoliation of the cutaneous layer, which shows distinctly inflammatory action.

Repeated applications of alcohol, or a mild solution of bichloride of mercury (1–1000), or of nitrate of silver (1–100), will cure this condition after a time, as well as ameliorate, if not cure, the paroxysmal cough from which the patient suffers. In many such cases, however, there is a marked lithæmic condition, and we will help not only the condition of the auditory canal, but also the secondary or concomitant congestion of the pharynx and larynx by frequent doses internally of lithia and bicarbonate of potash, together with some heart tonic like caffeine, which is also useful in promoting urinary excretion.

Of course, in many cases like those of which I have been writing, the aural inflammation and a catarrhal condition of the upper air-passages, with marked increase of secretion, may exist together, and it is almost impossible to say that the ear is in any sense the source of the cough, as this symptom may be wholly caused by an independent laryngitis or tracheitis which is present.

In speaking on this subject of aural reflexes, it may be remarked with a feeling akin to surprise how no attention is paid to it in late editions of works on aural disease, like Politzer and Buck; Dench, it is true, speaks about the reflexes originating in the auditory canal, in his chapter on impacted cerumen, but, so far as I could discover, nowhere else;[1] and yet it is a matter of common knowledge, almost, that "ear cough" exists. Despite this statement, I trust in a practical way my reference to it in this paper may still be found suggestive and useful.

One of the most interesting facts connected with cough—originating evidently in the upper air-passages—is how little we can judge, at times, of the source or nature of the cough from visible appearances; some of the worst-looking throats give, at times, literally no symptoms, and, for one, I am disposed to regard these throats as usually, if not always, normal. Symptoms are evidences of disordered function, and are appreciated by our organs of sense and the reports given us by the patients themselves. If, therefore, none can be found and none are accused, is not this sufficient proof that the organ itself is probably healthy? Again, we shall have all the appearances of a healthy mucous membrane, and yet, strange to say, the patient is always complaining of abnormal or unpleasant sensations, or functional disability in the vocal muscles. These statements are not always exaggerated; they are probably often true, and, if rightly interpreted, lead us to a correct explanation and treatment of them.

Many years ago I reported a case of chronic laryngitis, which served to illustrate how the mucous membrane of the vocal cords may be in an objectively morbid condition, though their physiological functions be restored (AMERICAN JOURNAL OF THE MEDICAL SCIENCES, October, 1875). In an analogous way, I might also show at present how certain patients affected with redness and swelling of the larynx cough a great deal, and others do not. Of course, we can readily affirm that in the one case there is some point of continuous irritation elsewhere which causes constant cough, and in the other there is not. Such explanation is, however, nothing more at times than a surmise, and we are thrown back upon our inadequate knowledge at present to give a complete and satisfactory solution of such examples.

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[1] I do not wish to mislead, so that I would add that Dench has a most excellent chapter on "Aural Reflexes," but all due to disease elsewhere, and not in the canal itself.

In just such instances I have found the best curative effects in a change of air and scene. I am not confident that it is of essential importance that the change shall be from the city to the country, or to a seaside resort. Sometimes the change from one city to another will rid the patient of an obstinate cough which may have lasted for weeks, and resisted much and various medication. Frequently, however, I send these patients inland to breathe the air of pine forests, and where the soil is porous and well drained, and thus obtain most satisfactory results. I know, however, of one seashore resort, *i. e.*, Atlantic City, N. J., which even during the winter months has been most beneficial to cases of "cough" which had resisted other remedial agencies. The special value of this shore climate appears to consist, singular to relate, in its relative dryness as compared with many other places on the ocean.

In the early spring there is nothing which will remove a harassing cough of this kind sooner than a few days' trout-fishing with rod and reel. In the summer, when I am able, I like to send those who cough obstinately to some good sulphur-spring, as I am satisfied that not only the air in the vicinity of sulphur-springs, but also the sulphur-baths and inhalations are very useful in building up impaired nervous constitutions in which such coughs often predominate.

Alongside of these individuals there are others who are apparently in good health and yet are constantly hawking, coughing, and expectorating. Usually these patients are lithæmic to an intense degree, and after a while the lithæmic state is complicated by the presence of an elongated palate and a thickened, congested pharynx and larynx. Lithæmia, if continuously neglected, may become, or find expression in, an evident rheumatic or gouty state. Under these circumstances it is not uncommon to find the mucous membrane of the upper air-passages much infiltrated. Frequently this extends far down the trachea, and tenacious mucus is pretty constantly present and is expelled with difficulty.

Such a condition and the cough dependent upon it is helped more by salicylate of soda or the salts of lithia than by local applications or anodyne cough mixtures. I have already on a former occasion pointed out the marked influence of malaria in producing congestive conditions of the respiratory passages which occasion rebellious cough. This manifestation is often with difficulty traced to its cause, and medication alone seems to establish the diagnosis.

In a few such cases it has seemed evident to me that quinine and arsenic would not benefit, when bark, in tincture or fluid extract, frequently repeated and in sufficient doses, was certainly curative.[1]

The obstinate cough due to a dilated heart, or one affected at the orifices with organic changes, is very frequent and should be constantly kept in mind. Not seldom, when I have not known what else to do, I have freely stimulated a somewhat weak cardiac action and thus stopped a bad cough in a few days. Previously the patient had taken numerous medicines, with little or no benefit. It is not always possible to make out any cardiac murmur, but it is indicated in these cases occasionally to give heart tonics, even more than if a loud murmur were present. The result is indeed very surprising at times, and the cough disappears very rapidly.[2]

Instead of the rheumatic dyscrasia affecting the joints it may lodge itself in serous membranes like the pleura or peritoneum. In attacking the pleura it produces only slight pain at times, and for this reason, doubtless, no recognition of the cause of cough is made out. I have also known a case where the ear could detect little or nothing by auscultation, and yet I felt sure, through repeated observations and treatment, that pleuritis was the cause of the cough. One or two small fly-blisters locally applied in the beginning aborted the attacks and very soon the patient was well. Sometimes the merely mechanical action of an enlarged spleen or liver pressing on the diaphragm will occasion cough. By slightly forcing these organs downward and inward, a paroxysm of cough may also be occasionally produced. In these instances, a specially sensitive area is found over the lower margin of the liver or spleen.

In many instances of cough of various kinds I have obtained very great temporary relief from dry vapor inhalations of different volatile fluids. The best combination of this kind which I have hitherto discovered, consists of equal parts of camphor, menthol, and eucalyptus. This I use as an inhalation both for throat and nose. The addition of spirits of chloroform, as we all know, to these inhalations will be found often very useful.

In all cases of cough arising from severe bronchial inflammation, or in those from broncho-pneumonia, I am now strongly in favor of using inhalations of beechwood creosote mixed with steam. They are valuable in the cure of these diseases and relieve cough very much.

No doubt the antimicrobic action of the creosote is serviceable. In several instances of grip that I have treated I am thoroughly convinced that the cough of this disease was diminished more with inhalations of creosote than in any other manner. As a preventive means of treatment of cough I have no doubt in my mind that a resort like Hot Springs, Virginia, where we now are, is most useful. By making the skin and kidneys more active, and stimulating the function of the liver, these baths and the massage treatment which follows must render great service. In the bracing mountain air and the dietary control exercised by the resident physician we have additional useful influences.

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[1] In this connection I would remark that certain cases of pneumonia are evidently malarial in origin. In one case I can now distinctly remember, in which Dr. Loomis was the consultant, the typical signs of pneumonia disappeared within twenty-four hours under antimalarial treatment.

[2] I meet occasionally with cases of evidently slight cardiac dilatation, characterized by a systolic bruit, which appear and disappear in a brief period. Fatigue causes them; rest and cardiac tonics cure them, at least for a time.

SYPHILIS AND LARDACEOUS DISEASE.

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When discussing the part played by syphilis in the etiology of aneurisms and atheroma of the aorta,[1] I was led to consider a doubtful point in the pathology of tertiary syphilis itself and its relation to lardaceous disease. I cannot help thinking that the relation between syphilis and lardaceous disease is one which throws some light on the pathological process in both affections.

Probably most medical men believe that tertiary manifestations of syphilis are due to the local presence of microbes, although these microbes of syphilis remain still to be discovered.[2] From this point of view gummatous formation in syphilis must be supposed to bear much the same relation to the microbe of syphilis that "caseous pneumonia" and the synovial swelling in tuberculous joint affections do to the bacillus tuberculosis. When the discovery of the real microbe of syphilis takes place, as it must some time, the microbe will almost certainly be found present in tertiary, as well as in primary and secondary manifestations of syphilis, though in the tertiary period it will probably be found almost completely localized to the lesions which it produces.[3] On the other hand, in the supposed sequelæ of syphilis, such as tabes dorsalis, the microbe will probably not be found present, and a clear demarcation will thus be established between these supposed "post-tertiary" or "quaternary" manifestations of syphilis and the true tertiary lesions.

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[1] See this Journal,

[2] The supposed discovery of syphilis bacilli by S. Lustgarten (Medizinische Jahrbücher, Vienna, 1885, pp. 89 et seq.) was at first thought to solve the question, but further experiments have failed to confirm Lustgarten's views as to the specific nature of his bacilli. It has been suggested that some of the bacilli found by him in the primary sores may have been "smegma-bacilli," whilst the few found present in internal gummata may really have been tubercle bacilli, a secondary infection having taken place or a tuberculous caseous nodule having been mistaken for a gumma. The whole evidence, as well as that concerning the claims of other microbes, which have been described as possibly specific of syphilis, was carefully discussed by Prof. P. Baumgarten in his Lehrbuch der pathologischen Mykologie, 1890, vol. ii. pp. 681-686.

[3] See also the additional note at the end of the paper.

It might be argued that because syphilitic gummata are apparently not infectious they cannot contain the microbe of syphilis. The fact, however, that the secretions from tertiary syphilitic ulcers have not been shown to be infectious is no proof that the local presence of a microbe is not the cause of tertiary lesions. If it had not been that a special method of staining had rendered it comparatively easy to detect the presence of the tubercle bacillus, and if there had not been animals easily infected by inoculation with the tubercle bacillus, the presence of this bacillus would never have been proved to be the cause of lupus.

It would seem as if the undiscovered microbe of syphilis, after it has run its usual course and worn itself out in the secondary stage, often remains in a latent or quiescent state scattered about the tissues of the body,[1] and that although unable to give rise to general symptoms in its host, it nevertheless retains the power of causing local harm by gummatous formation, especially when the tissues of the body have become weakened either by general causes, such as alcoholism, or by local causes, such as a traumatism limited to some special part of the body.

Many considerations are in favor of the view that gummata are caused by the local action of a microbe. I shall here confine myself to putting forward an argument in favor of this view which has not yet, as far as I know, been brought forward. It must be taken only for what it is worth, but, as fresh evidence, may be of provisional use, until the question be finally settled by the discovery of the real microbe.

Lardaceous disease is acknowledged to occur in syphilitic patients at times without any suppuration, but besides this fact there exists another curious connection between syphilis and lardaceous disease, namely, that a localized lardaceous formation in the neighborhood of visceral gummata may sometimes be recognized;[2] the latter occurrence, although hardly noted by authors, is very striking when observed. It is my intention here to use these facts as fresh evidence in favor of the view that a microbe is present in tertiary syphilitic lesions. I will endeavor to make myself clear.

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[1] There can be no doubt that methyl violet is a far more reliable stain than iodine for the lardaceous material; so Cohnheim and Cornil found it, and this is the opinion of N. P. Krawkow, who has recently worked on the etiology of the lardaceous formation (Cent. für Allg. Path. und path. Anat., vol. vi. p. 338). Lesser degrees of lardaceous disease would often escape observation but for careful microscopical examination, and doubtless for want of microscopical examination they often do remain unobserved, especially in the kidneys. I would point out that a routine series of microscopical examinations for early stages of lardaceous disease should be made in the kidneys from cases of chronic parenchymatous nephritis and "mixed" nephritis. This pathological anatomical study is required just as much as are further experiments on the production in animals of lardaceous disease before the laws determining the formation of this pathological material in the tissues of human beings can be finally determined. It is possible that there may be some kinds of chronic parenchymatous nephritis always associated with a slight lardaceous change in the kidneys, and that in such cases the nephritis and the lardaceous change may be both due to the excretion by the kidneys of toxins produced by the action of microbes in other parts of the body, for instance, by pyogenic microbes in the lungs of advanced cases of chronic pulmonary tuberculosis.

[2] See also the additional note at the end of this paper.

By the recent experiments of Dr. N. P. Krawkow (*Cent. für Allg. Path. und path. Anat.*, May 20, 1895) it has certainly been made clear that lardaceous disease is usually the result of absorption into the blood of products of the metabolism of parasitic microbes. Krawkow failed to produce lardaceous disease in animals when the suppuration was induced by turpentine instead of by pyogenic microbes,[1] whereas he actually succeeded in inducing lardaceous formation in the tissues of a rabbit by repeated injections of the mere filtrate of a culture of the bacillus pyocyaneus, that is, by the metabolic products of a microbe without the microbes themselves.[2]

In human beings lardaceous disease hardly occurs without definite suppuration except in cases of syphilis. Krawkow seems to have shown that when it arises from suppuration it is due to the microbes of suppuration. There seems to be little doubt that it occurs sometimes in cases of syphilis when there has been no suppuration at all or only very slight suppuration; it seems, therefore, not unreasonable to suppose that in such cases of syphilis the lardaceous formation is due likewise to a microbe, although not a pyogenic microbe, namely, to the as yet undiscovered microbe of syphilis.

The occasional localization of the lardaceous change in the neighborhood of syphilitic gummata may be taken as further evidence both that gummata are due to the local presence of the microbe of syphilis (whatever the microbe may ultimately turn out to be), and that this microbe has the power of causing lardaceous disease without the help of pyogenic microbes. This further evidence depends on the fact, as pointed out below, that if these theories be accepted, the localization of lardaceous formation in the neighborhood of syphilitic gummata can easily be explained, whereas it cannot be so easily explained by any other theories.

Granting that a gumma is a formation caused by the local presence of a specific microbe of syphilis (just as a tubercle is caused by the local presence of the tubercle bacillus), then we can understand that the tissue in the neighborhood of a gumma is more likely to be affected by the products of this microbe than are tissues further removed from the gumma. The metabolic products of the microbes inhabiting and causing the gumma must to some extent leak out and infiltrate the neighboring tissues, before being carried off by the lymphatics. If, as seems probable, one of the properties of these microbic products is to cause lardaceous formation in certain tissues (especially the walls of the minute bloodvessels) on which they can act, then it is not surprising that the lardaceous change should occasionally be found especially marked in the immediate neighborhood of gummata, or that it should take place there before occurring in more distant parts. In other words, it seems likely that the microbic products, manufactured within the gumma, should affect the surrounding parts before being carried off into the general circulation; after which these microbic products gradually produce the characteristic changes of lardaceous disease in the spleen and other organs peculiarly liable to this change before they are finally excreted by the kidneys.

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[1] He points out, however, that an abscess induced by the injection of turpentine may easily become secondarily infected with pyogenic microbes, and thus lardaceous disease, readily brought about by the action of these microbes, might be incorrectly attributed to aseptic suppuration caused by turpentine.

[2] Krawkow suggests that the lardaceous material may be a product of this microbic metabolism, and follows those who think that it is deposited in the affected tissues by a process of degeneration.

In this short paper I have endeavored to show how lardaceous formation in the tissues, when occurring in association with active tertiary syphilitic manifestations, and especially the lardaceous formation occurring in the immediate neighborhood of gummata, may be taken as additional evidence of the already probable view that active tertiary syphilitic manifestations are caused by the presence of a specific microbe at the site of the lesion. The conclusions which appear most probable may, I believe, be summed up thus:

That there is a specific microbe of syphilis, the local presence of which is the cause of the tertiary lesions of syphilis; that the metabolic products of this microbe have, like those of some other microbes, such as the staphylococcus pyogenes aureus and the bacillus pyocyaneus, the peculiar property of producing lardaceous formation in the tissues of the hosts.

Additional note on the view that tertiary manifestations of syphilis are caused by the local presence of a specific microbe.

By those who held that syphilis when it has reached the tertiary stage cannot be transmitted by inheritance from parents to their children, it might formerly have been alleged that the exceptions to this rule are apparent only, and that really in such apparent exceptions remnants of secondary syphilis must have existed in one of the parents. This explanation is, however, now untenable, for no one would call syphilis after it has existed fifteen years secondary syphilis, and cases are known where parents fifteen years or more after the commencement of syphilis have transmitted it to their offspring. Professor Fournier proves this by instances, and considers that of cases where syphilis has been transmitted to the fœtus, in about one case out of ten the parental syphilis dates from six years back or more.[1]

If, on the other hand, syphilis be allowed to be due to a microbe which, after the secondary stage, is supposed often to remain in the body in a latent or almost latent condition (though able to become active again as the producer of the local manifestations in tertiary syphilis), then the whole matter may be more easily explained.

According to this view, after the secondary period of syphilis is over, the surviving microbes of syphilis are supposed to be lying quiescent in different tissues of the body, but may occasionally be washed out by the blood-stream into the general circulation. If we accept this explanation it does not seem astonishing that parents while suffering from active tertiary syphilis produce children untainted by syphilis, just as parents whilst suffering from active tuberculous disease produce children perfectly free of congenital tuberculosis. Neither is it surprising that children of parents suffering from active or even latent tertiary syphilis may at times be born with congenital syphilis, in the same way that children of mothers suffering from active tuberculosis may be occasionally born with congenital tuberculosis, as has been conclusively proved by the observations of Birch-Hirschfeld and Schmorl (*Beiträge zur path. Anat.*, 1891, vol. ix. p. 428); P. Londe (*Rev. de la Tuberculose*, 1893); and Schmorl and Kockel (*Beiträge zur path. Anat.*, 1894, vol. xvi. p. 313).

In fact, just as syphilitic gummata and gummatous infiltration may be compared to tuberculous caseous nodules and tuberculous disease of synovial membranes, so, according to this theory, the process by which the fœtus may become infected from a mother in the tertiary period of syphilis may be compared to the process which Schmorl, Birch-Hirschfeld, etc., believe to be the one by which tuberculosis spreads from the mother to the fœtus. Professor Birch-Hirschfeld[2] suggested that in cases of congenital tuberculosis the tubercle bacilli "grew through" from the maternal into the fœtal portion of the placenta, and thus infected the fœtal circulation; this view has, moreover, gained support from the observations of R. Kockel and M. Lungwitz on "Placental Tuberculosis in Cows" (*Beiträge zur path. Anat.*, 1894, vol. xvi. pp. 294 *et seq.*).

We can easily understand, then, that if there be any microbes of syphilis in the general circulation of a woman at some period of her pregnancy, these microbes may reach and be lodged in the maternal portion of the placenta; there they may develop and multiply locally and thus "grow through" into the fœtal portion of the placenta, where some may enter the fœtal circulation and give rise to congenital syphilis.

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[1] Out of 562 cases where the pernicious effects of hereditary syphilis showed themselves, in sixty cases the parental syphilis was acquired six years previously or more. See Professor Alfred Fournier, L'Hérédité Syphilitique, Paris, 1891, p. 122.

[2] This was from analogy with what was observed to take place in the case of pregnant animals inoculated with anthrax. See Birch-Hirschfeld, "Ueber die Pforten der placentaren Infection des Fœtus," in Beiträge zur path. Anat., 1891, vol. ix. pp. 383 *et seq.* Birch-Hirschfeld suggested that the process of infection of the fœtus in congenital syphilis and congenital tuberculosis might be similar to that observed by him in the case of anthrax.

This theory, moreover, explains why a quiescent syphilis in the mother is probably more likely to be transmitted to the offspring than a quiescent syphilis in the father, for in the case of the mother there is the long period of pregnancy, during which the ovum may become infected in the way described. This theory will also elucidate cases, where a healthy child is born of syphilitic parents (not necessarily undergoing anti-syphilitic treatment at the time), though subsequent children suffer from congenital syphilis.[1] In such a case one must suppose that during the earlier pregnancy the syphilis microbes were lying quiescent in the mother's body, or at least that any which chanced to get into the general circulation failed to infect the placenta; but that during subsequent pregnancies the fœtus became infected either by some of the (previously quiescent) microbes getting into the general circulation and lodging in the placenta, or else by some tertiary syphilitic process localized in the neighborhood, reaching the fœtal circulation by spreading through the placenta.

By analogy mercury may be supposed to owe its influence on syphilis to some specific action on the microbe. No one will question the striking use of mercury seen at times in cases of tertiary syphilis as well as in its earlier stages. Those who think that primary and secondary syphilis are due to the presence of a microbe, on which mercury exercises an antagonistic action, must therefore admit that the beneficial effect of mercury in tertiary syphilis may be used as a slight argument in favor of the view that the tertiary as well as the primary and secondary manifestations of syphilis are due to the presence of a specific microbe. It would, however, be unprofitable here to discuss at greater length well-known evidence in support of a view which already appears probable; so probable, in fact, that the only additional evidence any longer really needed is the evidence which would convert the theory into a fact, namely, the discovery of the microbe itself.

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[1] See Fournier, op. cit. pp. 263–267.

IODOFORM-OINTMENT INJECTIONS IN THE TREATMENT OF SUPPURATIVE ADENITIS OF THE GROIN.[1]

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THE chief objects to be obtained in the treatment of suppurating inguinal buboes are their rapid disappearance, an amelioration of pain, and the absence of a compromising scar in the groin.

To this end various surgical procedures have been suggested from time to time, but it was not until 1856, when Broca,[2] Roux, Marchal, Abeille, and others advocated aspiration of the pus and injection of diluted tincture of iodine into the abscess cavity, that such favorable results were in a degree obtained.

In 1857 Lebert[3] reported a number of successful cases treated in a similar manner, except that he evacuated the pus through a small incision and injected the pure tincture of iodine.

Again, in 1871, Teackle[4] speaks of this method as being remarkably successful, and quotes several cases in which he has employed it.

Scott Helm,[5] in 1886, was, I believe, the first to substitute iodoform for tincture of iodine, and used it in the following manner:

The parts were cleansed and anæsthetized by means of ether spray, the pus was drawn off with a hypodermic, and the abscess cavity washed out with a weak solution of carbolic acid. Iodoform suspended in glycerin was then injected, the needle withdrawn and the puncture closed with collodion; over this an ordinary dressing and spica bandage were applied. Twenty-two cases were treated in this manner with but one failure.

Later, Helm substituted oleic acid for glycerin, and finally iodol for iodoform.

In 1889, Von Eichstoff[6] reported a series of cases treated by injections of iodoform and ether which he employed in two different ways, as follows:

First method. The pus was withdrawn and the cavity irrigated with boric acid solution, and then injected with the iodoform and ether mixture, the puncture being covered with an ordinary dressing, which was left in place for three days. In some cases he had to make a second injection, but never a third. A cure was accomplished in from three to eight days.

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[1] Read before the American Association of Genito-Urinary Surgeons, Niagara Falls, May 28, 1895.

[2] Bull. Gen. de Therapeutique, 1856, li. 208.

[3] Wiener med. Wochenschrift, 1858, No. 43.

[4] Medical Record, 1871, vi. 344.

[5] Chicago Medical Journal and Examiner, 1886, liii. No. 3.

[6] Thèse de Paris, Trait. des Bubous, 1889.

Second method. The parts were cleansed and the iodoform-ether mixture injected directly into the abscess cavity without evacuating the pus. As a rule, two injections had to be employed before a cure was accomplished, which on an average took about twelve days.

In the same year Fontan[1] described very minutely the treatment of suppurating buboes by injections of iodoform vaseline. He gives a total of forty-one cases so treated, the average time for cure being six to seven days. His method of procedure is as follows: The parts are shaved and cleaned; the bubo opened with a lancet and all the pus forced out; the abscess sac is then irrigated with diluted Van Swieten's fluid, and iodoform-vaseline injected with a glass syringe, previously warmed in hot water. A cold wet dressing is applied in order to congeal the ointment at the opening. In some cases it was necessary to resort to an injection a second time.

In 1893, W. K. Otis[2] reported very favorable results in sixteen cases in which he used injections of iodoform ointment in a similar manner.

Having employed this plan of treatment with such satisfactory results, I feel justified in reporting the few cases so operated on; these were not selected, but taken at random as they entered the hospital and clinic. The steps in the procedure are similar to those advocated by Fontan, with the addition of the peroxide of hydrogen, and are as follows:

1. The operative field is shaved and rendered surgically clean in the usual manner.
2. A few drops of a 4 per cent. solution of cocaine are injected beneath the skin where the puncture is to be made.
3. A straight sharp-pointed bistoury is then thrust well into the most prominent part of the tumor until pus flows.
4. All of the pus is forced out through this opening by firm but gentle pressure, as this procedure is, as a rule, very painful.
5. The abscess cavity is irrigated with pure peroxide of hydrogen until it returns particularly clear.
6. It is then irrigated with 1:5000 bichloride of mercury solution, all of which is carefully squeezed out.
7. The now thoroughly cleansed abscess cavity is completely filled, but not painfully distended, with 10 per cent. iodoform ointment by means of an ordinary conical glass syringe, previously warmed in hot water.
8. A cold wet bichloride dressing is applied with a fairly firm spica

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[1] Espieux: Thèse de Montpellier, April, 1889. Archives de Méd. Navale, 1889, lii. 5.

[2] Journ. Cut. and Genito-Urin. Dis., May, 1893.

bandage, the cold congealing the ointment at the wound, and thus preventing its escape into the dressing.

The patient should be kept very quiet for the first twenty-four to forty-eight hours, rest in bed being preferable, although not absolutely necessary.

The dressing is removed at the end of the third or fourth day and the parts examined; if pus has reaccumulated or the ointment escaped into the dressing, a second injection may be made. If, on the other hand, all looks well, the first dressing is replaced by a gauze pad and spica bandage, and the patient told to report in two or three days for examination.

In a few of the above series of cases several drops of an oily serous fluid were observed at the first dressing escaping from the puncture; this fluid was carefully wiped off and a sterilized gauze dressing applied, recovery being in no way retarded by the exudation.

The following table gives the etiology, amount of pus evacuated, number of injections employed, and time for cure in each case:

Case.	Etiology.	Amount of pus.	Number of injections.	Result.
1	Gonorrhœa: chancroids . .	12 drachms.	One.	Cure in 14 days.
2	Gonorrhœa	4 "	One.	" 10 "
3	Chancroid	12 "	One.	" 14 "
4	Chancroids	3 "	Two.	" 7 "
5	Gonorrhœa	6 "	One.	" 14 "
6	Chancre: chancroids . . .	11 "	One.	" 7 "
7	Chancroid	4 ounces.	One.	" 21 "
8	Chancre: chancroid . . .	2 "	Two.	" 21 "
9	Chancroids	12 drachms.	One.	" 7 "
10	Chancroid	6 "	One.	" 14 "
11	Gonorrhœa	6 "	One.	" 8 "
12	Gonorrhœa	4 "	One.	" 10 "
13	Chancroid	3 "	One.	" 11 "
14	Gonorrhœa: chancroid . .	5 "	One.	" 12 "
15	Gonorrhœa	12 "	One.	" 12 "

Suppurative action and pain ceased after one injection of the iodoform ointment, except in two cases; in these the injection had to be repeated on account of a slight reaccumulation of pus.

None of the above cases were pronounced cured until firm pressure in the groin elicited neither pain nor fluctuation, and the overlying skin had resumed its normal appearance.

In order to secure the most favorable results from this method, it should only be employed when the glands are quite thoroughly broken down, so that the iodoform may come in direct contact with all of the infected tissues.

It is not, of course, claimed that this method will succeed in every case of suppurative adenitis, but its many advantages over the more radical procedure render it, in my judgment, worthy of a trial. There is no necessity for the patient to remain in bed, or undergo anæsthesia; the little scar in the groin is soon covered by hair, and he or she is spared a more or less painful and tedious convalescence. If after one, two, or even three injections, this method fails to produce the desired result, an incision may then be made and the contents of the bubo removed; the previous treatment not having interfered in any way with this operation.

FEVER IN THE COURSE OF BRIGHT'S DISEASE AND IN URÆMIA.

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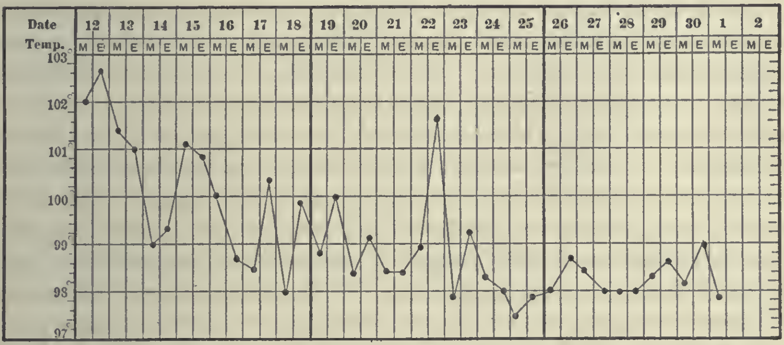
Among the many and various symptoms of acute and chronic nephritis that have received special attention the temperature has, comparatively speaking, been neglected, though a few authors have given it considerable study. These will be alluded to more particularly in discussing the various conditions under which fever may occur and the forms it is apt to assume.

There are three groups of cases of distinct character in which acute or chronic nephritis and elevation of the body temperature are found to be associated. In the first group are included cases of mild febrile reaction at the beginning of acute nephritis; in the second the elevated temperatures result from complicating diseases, while the third and least well recognized group is that in which the temperature is elevated in the course of the uræmic state. It is to the latter that I wish to call attention more particularly in this paper, but it will be interesting, I think, to consider briefly the other groups for the sake of completeness.

I. The temperature at the onset of acute Bright's disease has quite commonly been found to be elevated. This elevation is rarely marked enough to attract more than passing attention, and little study has been made of its causes. Without attempting to enter upon the broad question of the pathogenesis of Bright's disease, we may say that this early slight fever is due either to the inflammatory or degenerative lesion of the kidney, to poisoning of the system, on account of the retention of deleterious substances which the kidney, as a rule, excretes, or, as would sometimes seem probable, from the primary infection or intoxication, which is to be looked upon rather as the cause than as the result of the disease of the kidney. The clinical fact, however, is well known. In the cases appended the type and degree of pyrexia usually observed are well illustrated.

Case I.—W. C., aged thirty-five years, had been out of bed but a few days after recovery from an attack of typhoid fever when he became languid, weak, and, as he expressed his condition, very stupid. In this state he first came under my observation. The urine was greatly reduced in quantity and contained considerable albumin with casts. The man's temperature was at first 102.6° F. It soon declined, however, but remained moderately elevated for over a week, subsiding gradually. During this time there was also a gradual increase in the quantity of the urine, and the patient's general condition steadily improved. He recovered entirely in a short time.

Chart I.



Case II.—M. D., aged thirty-five years, had noticed for several months increasing difficulty in putting on his shoes, but he really had not thought himself ill until three weeks before his entrance into the hospital. At that time there was decided swelling of the feet, which later involved the legs and scrotum, and was soon followed by vomiting, pain inthe back, and headache. The urine was scanty, acid in reaction, and contained considerable albumin. The specific gravity was 1020. The patient was extremely pale, and had decidedly the appearance of a nephritic. The arteries were a little stiffened and the ventricle hypertrophied. After a few weeks the dropsy and other symptoms had improved so much that the patient was discharged from the hospital. In this case it seemed evident that the man had a chronic form of nephritis, and that the present attack was of the nature of an acute congestive or inflammatory exacerbation. There were none of the ordinary indications of a uræmic state. The temperature in this case, also, was above the normal for several days, but fell as the urine increased in quantity aud the dropsy disappeared.

Case III.—M. C., a young woman, having a subacute form of nephritis was exposed to the weather and became thoroughly chilled. Shortly afterward there was considerable pain in the back, and the urine showed increase of albumin, with blood cells. The temperature at the same time rose to 102° F., and varied between this and the normal for two days.

Such degrees of fever at the onset of acute nephritis are usual and well known. In some instances, however, the primary fever is very marked, and may be quite alarming. This is especially the case in the primary bacterial nephritis of Bamberger, Aufrecht, Litten, Babes, Perret, and Mannaberg, or infectious nephritis, as Friessinger calls it. In these cases, indeed, there is little doubt but that these are instances of infectious diseases localizing themselves in the kidneys from the first. Sometimes, as in the series reported by Friessinger, there is distinct epidemicity, and various micro-organisms have been isolated in such cases. It is in these infectious cases that high fever may occur at the onset. Friessinger[1] records one in which it reached 105° F., and in which the symptoms of infection were very marked.

II. A second variety of fever in the course of nephritis is that which owes its origin to inflammatory complications, such as pericarditis, pleuritis, pneumonia, or the like. There may also be temporary elevations of the temperature, resulting from some renal complication, such as acute exacerbations in chronic nephritis, the development of pyelitis, or the deposit of chalky material in the course of a gouty Bright's disease. Sometimes these inflammatory complications may be so latent that their existence remains unrecognized, and the cause of the elevated temperature is undiscovered until autopsy is performed. Some authors have invoked this tendency to latency of inflammatory complications to explain the high fever of some of the forms of uræmia presently to be described; but it is to be noted that the fever resulting from inflammatory complications in Bright's disease are apt to be very low, especially in comparison with that seen in similar conditions in the course of rheumatism, whereas the cases to which this theory has been applied are just the ones in which hyperpyrexia is most commonly observed. I do not dwell longer on this question, as it is, after all, aside from the present discussion, and for the same reason it is unnecessary to instance cases.

III. The third condition under which fever is likely to occur in the course of Bright's disease, and it is to this I have wished most particularly to call attention, is the state ordinarily known as uræmia. Before entering upon this question in its clinical aspects it may be of interest to review hastily the various theories that have been offered in explanation of this condition. One of the oldest and best known is that of Traube. This would explain the manifestations of uræmia on a mechanical basis, ascribing them to a state of repletion of the vessels and œdema of the brain, inducing a secondary condition of anæmia of the brain substance. This theory was based on the discovery in some cases of conditions such as described, particularly in autopsies on persons dead of uræmic convulsions; and it seemed to receive a measure of support from the investigations of Munck, and Otto and Bidder, who found that injection of water into the cervical vessels induced symptoms not unlike those of uræmia. The theory, however, is disproved by the fact that many cases do not present the œdematous conditions of the membranes or brain-substance described, and more particularly by the observation of Carter,[2] of Liverpool, that analysis of the cerebral substance does not show a disproportionate amount of serosity after uræmic convulsions. The experimental evidence cited loses its force when we recognize that the quantities of water injected are alone capable of inducing toxic manifestations. After Traube various chemical theories have been brought forward. One thought that ammonia was the noxious agent, another ascribed the symptoms to potassium poisoning, another to creatin, creatinin, urea, and so on. That none of these theories is satisfactory to explain the manifestations of uræmia is apparent enough when we study the experiments of the many who have worked in this field. It is true that each of these substances may act as a toxic agent when injected in sufficient quantity, but none is capable of reproducing the exact manifestations of uræmia. Bouchard,[3] who has done so much in this field, thinks that there are at least seven toxic substances in the normal urine. These are: 1, a diuretic substance (urea); 2, a narcotic poison; 3, a sialogogue; 4, a temperature-reducing substance; 5 and 6, convulsants (one, doubtless, potassium), and 7, a poison which causes contraction of the pupil. However this may be, and no doubt all of these substances do exist in the urine, none of them can be looked upon as the cause of uræmia. Recently Hughes and Carter[4] have added very important facts to the elucidation of the nature of uræmia. According to them the active poison is probably an albuminous substance quite different from any which exists in the normal urine.

In all of these investigations it has been assumed that the temperature in uræmia is reduced, and no doubt this is usually the case. A few investigators have, however, studied the question of urine-intoxication with special reference to the temperature. Binet[5] showed that human urine contains a substance which may be precipitated, dissolved in glycerin and reprecipitated with alcohol, and which has the power of causing elevation of the temperature in guinea-pigs. It is most abundant in the urine of tuberculous individuals, and is most active in tuberculous guinea-pigs. The temperature usually begins to rise after two hours, reaches its height in about three hours, and subsides after four or five. He regards it as of the nature of a ferment, and calls attention to the fact that various ferments (pepsin and trypsin, Bergmann and Angerer, fibrin ferment, Edelberg, bacterial ferments, Charrin, Ruffer, Hildebrand, Roussy and others) have been found to have similar pyretogenous properties, and that some of these occur in the urine at times. Lepine[6] sought to escape some of the objections that may be urged against other methods by injecting sterile normal salt solution into the ureters of a dog under pressure sufficient to insure a steady entrance of the liquid. Injection of the same amount of sterile salt solution directly into the veins of a dog did not cause the symptoms (dyspnœa and fever), and he concludes that there are pyretogenous substances in the urine. He was further able to induce fever by injection of extract of the kidneys of a normal dog. This experiment is open to several objections. Bouchard, and latterly Hughes and Carter, injected the urine itself into the veins, and found very constantly fall of the temperature. Binet would explain this by the assumption that there are both fever-provoking and temperature-reducing substances in the urine, and that the latter usually dominate.

Clinically, the occurrence of fever in the course of uræmia has been known to exist for a long time, but little attention was paid to it. Lees called attention to it in 1852, but authors generally rarely referred to the temperature until the publication of the well-known papers of Bourneville,[7] in 1872. This author claimed that depression of the body-heat is a constant phenomenon of uræmia, and, indeed, made this the basis for denying the uræmic nature of eclampsia. Later writers, all or most, at least, agree that many cases of uræmia are attended with elevation of temperature. This change of view is chiefly attributable to the writings of Bartels,[8] who maintained that he had seen but one case of uræmic convulsions in which the temperature was not elevated. There is, however, much difference of opinion as to the cause of the fever, many holding that it is usually due to complications. This view, while it is true of some cases, is not true of most, for numerous instances are recorded where careful search was made after death for some local lesion to explain the fever. I think that the majority of authorities would now admit without question the existence of fever of purely uræmic origin, and the tendency of the day is to assign as the cause of this some toxic excitation of the heat-regulating apparatus, rather than cerebral or meningeal congestion, or the like. One very striking evidence of the toxic, rather than organic, character of the fever in uræmia is the precise manner in which the temperature frequently follows the increase or decrease of the uræmic state and the very rapidity of the rise and decline. That congestion of the meninges or œdema of the brain is not the immediate cause of the fever is evident from the facts that, while in cases reported by Chantemesse and Tenneson,[9] and by Richardiere and Therese,[10] there was one or the other of these conditions; in those of Bouveret[11] and of Dumont[12] no lesion was discovered, and Carter, in his chemical analysis, failed to find excess of water in the brain substance.

Bartels called attention to the clinical fact that very frequently uræmic symptoms develop rapidly when there is rapid subsidence of the dropsy, and ascribes this to the liberation of poisonous substances contained in the cellular œdema. In such cases there is apt to be some elevation of temperature, which Bartels would ascribe to the intoxication; but Carter thinks this due rather to the hot vapor baths, and cites a case in point. That this view is not an accurate one is apparent in the following case under my observation. In this there was decided rise of temperature coincidently with the rapid decline of dropsy, and for which there was no adequate explanation excepting that indicated. No hot-air bath had been used, and the temperature became normal as soon as the œdema was completely discharged.

Case IV.—P. M., aged twenty-six years, a driver, had led a very exposed life; had had a chancre two years previous to his coming under my observation; but was not excessive in the use of alcohol, and had really had no serious illness except pneumonia a few years before. Six months before he had pain in the back and other vague symptoms, which disturbed him for a time, but subsided spontaneously. The illness which brought him under my notice began on the night of November 6th, after he had been exposed to the weather. He thought he had taken "cold," and had considerable cough. The next day his face was swollen, and later the legs and abdomen. The urine was very scanty, high colored, the specific gravity was 1034, there was much albumin and hyaline, granular and epithelial casts. The anasarca became marked; there was occasionally great dyspnœa. No lesion of the heart or lungs was discovered on physical examination. The treatment instituted was purgation and sweating with pilocarpin. After a day or two of normal temperature there was a slight rise, which soon subsided, and then the temperature was normal for ten days. At the end of that time there was a sudden rise to 101° F., coincident with the establishment for the first time of free diaphoresis by the aid of pilocarpin. The amount of liquid discharged through the skin was truly remarkable, as was also the rapidity with which the anasarca disappeared. During the four or five days in which the dropsy was subsiding the temperature remained elevated, and after the complete disappearance of œdema the temperature became normal, and convalescence was soon complete. The patient was discharged entirely well, and was still so a year later.

Whatever solution may eventually be found for the existence of fever in certain cases of uræmia, I am for the present more concerned with establishing the clinical fact that there are certain cases of uræmia in which the temperature is elevated in the absence of any complication and irrespective of the inflammatory condition of the kidney itself. It is a well-recognized clinical fact, first clearly established by Bourneville, that the temperature in uræmia is usually depressed below the normal, but it should be recognized that the reverse may be the case, and that in the course of chronic Bright's disease a sudden elevation of the temperature without any discoverable cause may be due to uræmia. It is impossible at the present time to say why there is elevation of the temperature in some and depression in others; nor is it possible to indicate any features in which the febrile cases differ from the afebrile excepting the temperature, for exactly the same clinical manifestations that are seen in the febrile cases are often present without any elevation of the temperature. It is possible, however, to distinguish two classes of cases as far as the temperature is concerned; those in which the onset is very sudden and the symptoms pronounced, and those in which the approach is insidious or the symptoms of a depressive character.

I. The first or eclamptic form is most frequently present in cases of uræmia with convulsions, as Bartels pointed out, but there may be just as decided fever in comatose or delirious cases in which no convulsion occurs. Many cases of this form of uræmic fever are recorded, but I select the following, in which the temperature was specially observed, to indicate the character of the attacks.

Richardiere and Therese report a case of acute nephritis following exposure to cold, in which the temperature from the first was entirely normal, and remained so until the patient developed signs of urœmia. The temperature then rose to 102.2° F., after which convulsions developed and there was a further rise of the temperature to 104° F. After five days there was a critical decline of fever, and the temperature again remained normal until a second attack of uræmia was announced by dimness of vision, headache, and a rise of temperature to 101.2° F. This attack was aborted by prompt venesection. In their second case there were the signs of interstitial nephritis, with œdema of the legs and scrotum. For some time the temperature was normal, then the patient became delirious; he refused to stay in bed, and shortly afterward or coincidentally the temperature suddenly rose to 103.6° F. There was also epistaxis. The day following epileptiform convulsions were noted, and the uræmic state continued for five days, finally yielding to venesection.

Mousson[13] reports a case in which there were dropsy, pleural effusion, considerable albuminuria with blood cells. After five days of normal temperature there was a sudden elevation to 103.6° F. with coma, epistaxis, and convulsions. Subsequently there was Cheyne-Stokes breathing, and the patient was bled. The temperature fell quickly and remained but little above the normal for a day or two, when it subsided completely. In this case the first elevation of the temperature occurred before the first convulsion.

Gillet[14] reports a case in a man of twenty-eight years, in which there was stupor followed by convulsions. The temperature was between 99° and 100° F. There was bloody expectoration and some soft râles at the bases of the lungs; the urine was highly albuminous. The temperature rose during the two days following until it reached 105.8° F., when the patient died. The autopsy disclosed interstitial nephritis, œdema of the bases of the lungs, and some meningeal congestion.

In these cases of typical eclamptic fever it will be noted that the temperature in reality began to rise before the onset of the convulsions, which cannot, therefore, be regarded as causing the elevation of temperature by the violence of the muscular movements. In the first case of

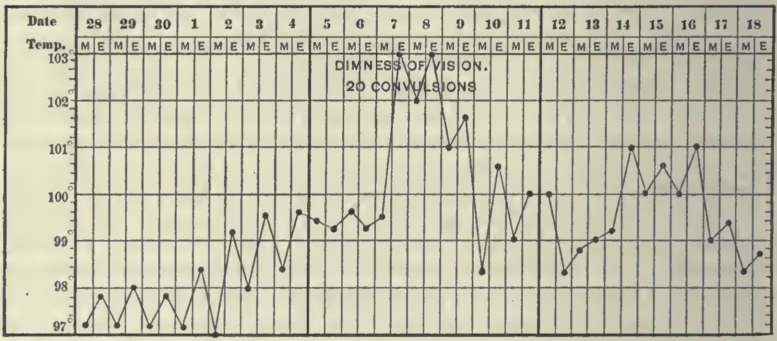
Richardiere and Therese this was further disproved by the subsequent abortive attack in which the temperature rose without convulsions, subsiding promptly after venesection. Similar cases have been recorded by Dumont, Carter, Amidon, Wiener, Hughes, and others. The two following from my own experience are instructive and to the point.

CASE V.—T. D., aged thirty-seven years, was brought to the hospita; by the ambulance at 11 A.M. June 6th. He was decidedly stuperousl the breathing was heavy, somewhat stertorous; the skin was moist, the pupils of ordinary size and responsive. The patient was catheterized, and the urine found to be scanty, heavy, and albuminous. The man was evidently in an uræmic condition, and was therefore placed in a vapor bath, and perspired very freely; but despite this favorable action he rapidly sank into a condition of complete unconsciousness and became convulsed. Convulsions followed in rapid succession during two hours after his admission, in spite of the administration of nitrite of amyl, chloroform, and chloral; and the patient was finally bled after the eighth convulsion, nine fluidounces of blood being removed. At once there was decided improvement. An abortive convulsion, which was readily controlled by inhalation of chloroform, occurred five minutes after the venesection, but the patient almost immediately afterward became conscious, and remained so during most of the day. The next night there was another series of convulsions, beginning about ten o'clock. After the fourth the patient was again bled (nine fluidounces), after which there were but two light fits. On the night of the 10th, three days later, there were three slight convulsions, after which the patient recovered. Repeated examinations of the urine confirmed the diagnosis first made of chronic parenchymatous nephritis; and though most careful physical examination was made no complication of any kind was discovered in the other organs. The point of particular interest in this case for the present was the behavior of the temperature. On admission this was found to be 100.1° F., but almost immediately it began to rise. The elevation really began before the first convulsion, but the greatest elevation was not reached until some time after the beginning of the fits, when it was 106.6° F. After the cessation of the convulsions there was a rapid decline of the temperature to about 100° F. The next day there was another rise of the temperature without fits to 102° F., and during the night when the second series of convulsions occurred the temperature rose to 102.6° F. After this the temperature was subnormal until the last series of fits, when it rose again, but only to the normal.

CASE VI.—J. O., aged twenty-six years, a laboring man, giving a good family history; had himself led a very irregular life. He had worked in various parts of coal-mines from an early age; was habitually much exposed, and drank excessively of ale. In December of 1892 he became thoroughly wet and chilled and took "cold." This was not unusual, as he had had chronic cough, beginning at a time when he worked in the dust of the "breakers." About January 1, 1893, he put himself under the care of a medical man, but did not improve, and on the contrary noticed that his weight was increasing and that his face was growing puffed. Soon his feet became swollen, and subsequently the whole body, his weight increasing twenty pounds.

When he first came under my care, in February, his appearance was that of a man having the anasarca of renal disease; his color was very white, the blood examination showing 3,350,000 erythrocytes, 10,000 leukocytes, and 53 per cent. of hæmoglobin; there was a puffed condition of the face and neck and universal œdema. The urine was below the normal in quantity, varying from twenty to forty ounces; it was loaded with albumin and contained hyaline, granular, and blood casts. The patient was troubled with considerable cough, and on examination of his chest there were dry and moist bronchial râles, with evidences of slight emphysema. The heart was healthy, but the second sound markedly accented, and the pulse so tense that it was difficult to determine the existence or absence of hardening of the vessel wall. He was ordered diuretic and purgative treatment, but the condition remained practically unchanged during several months. His temperature during this time was almost constantly below the normal, and never above that point. On the first day of May the temperature rose to the normal, and the next day was 99.2 F. At the same time the patient complained of pain in one of his teeth, and then of headache. These symptoms continued for five days, the temperature remaining at about 99° F. On the 7th, in the morning, there was sudden dimness of vision, followed by an uræmic convulsion, and after this by a number of others during the day and the following night—twenty in all. He was put in a hot vapor bath, was bled about twenty fluidounces, was given croton oil, and purged with salines, and received chloral by the rectum. The next day he was wholly conscious and continued to improve. The temperature, which had been about 99° F. before the first convulsion, rose shortly after the onset of the latter to 103° F., where it remained the next day. For several days after this it was elevated, though not so much. Subsequently there was a rise of temperature due to mastoiditis, but excepting this there were no further unpleasant symptoms, the temperature remained normal or below the normal, and the patient finally recovered almost entirely.

CHART II.



In each of these, again, it is noted that the rise of temperature began before the first convulsion and the second one is particularly instructive and significant in that there was a period of five days of slight fever with mild uraemic symptoms before the convulsions began. Indeed, my previous experiences with febrile temperature before violent uræmia led me to predict its occurrence in this case three days before the first convulsion.

In the following cases there was similar, sudden fever, running an acute course, but without any convulsions. In these, of course, the old theory of convulsive fever cannot be entertained at all.

Bouveret reports the case of a woman who came to the hospital with well-defined indications of chronic interstitial nephritis. There was considerable gastric irritability, vomiting, etc., and the temperature was 102.8° F. The following day the symptoms increased and the temperature continued elevated. This continued four days, when the temperature rose to 108.6° F., and the patient became comatose and died. At the time of death the thermometer registered 109.6° F., while an hour later it was 110° F. There was at no time any tendency to convulsion. At the autopsy there was found a high grade of contraction of the kidneys and some œdema of the lungs, together with hypertrophy of the heart, but no lesion of any other organ or structure including the brain cord and their membranes.

Richardiere and Therese record one case in their series having the clinical features of chronic interstitial nephritis, in which uræmia was suddenly developed in the form of coma, Cheyne-Stokes respirations, and sudden elevation of the temperature to 102.2° F. There were no convulsions, and the temperature remained between 102° and 103° F. for three days, when the patient died. Autopsy revealed the lesions of chronic interstitial nephritis, and there was some sub-arachnoid effusion of serum.

Chantemesse and Tenneson detail an interesting case occurring in a young woman of thirty-one years, who had had slight and transient œdema without albuminuria shortly before the delivery of twins. Eleven days after the labor there was pain in the brachial plexus and back of the neck, with large albuminuria and somewhat fetid lochia. During the next five days there were shifting palsies, mostly hemiplegic, loss of consciousness, dimness of vision, and ascending fever. The temperature finally reached 105.2° F. on the sixth day, and the patient perished. At the autopsy the kidneys were swollen and congested, and there was congestion of the membranes and substance of the brain and cord.

In a second case a man of sixty-six years who had had two previous attacks of unconsciousness became suddenly comatose, and showed diminution of sensation with loss of power on the right side, There was decided albuminuria. The temperature was 104.8° F. in the rectum, and later 106.2° F. At the autopsy arterio-sclerotic kidneys, atheroma of the aorta, some congestion of the bases of the lungs, and dropsy of the ventricles were detected.

In a third case the temperature rose during an attack of coma and hemilateral convulsions to 100.2° F., and remained between this point and 99° F. for over two weeks, during which the patient was more or less stuperous, but not convulsed. There was decided albuminuria. The patient passed from their observation shortly afterward.

A striking case of sudden uræmia, with delirium and high fever, terminating after free diaphoresis was observed by Damaschino.[15]

I have seen several cases of sudden uræmic coma with similar eclamptic fever, but have not preserved accurate clinical notes of any.

It will be seen from a study of the cases detailed that the temperature in this variety of uræmic fever rises more gradually than would at first seem to be the case. In nearly all, whether there are convulsions or not, there is an elevation for one or several days of a degree or two. When convulsions set in they are, as a rule, preceded by sharp rise of temperature to 102°, 103° or 104° F., and following the fit there is generally still more elevation, sometimes to 105°, 106° or 107° F. In fatal cases the high temperatures persist to the end, and there may be a further rise of a degree or more after death. In cases that are not fatal the temperature declines very soon and reaches the normal in a day or two unless the convulsions or other signs of the intoxication persist, when the temperature may also continue elevated.

II. The second form of febrile uræmia alluded to is that in which the onset is rather insidious, or at least not attended with the violent symptoms seen in the eclamptic cases, and in which the clinical manifestations are rather those of a slow infectious process not unlike those seen in the typhoid state. Systematic writers speak of such cases in reference to the differential diagnosis of typhoid fever (Osler[16], Pepper[17], Chantemesse[18]); but the literature does not furnish many accurately studied cases. In these cases the patient is frequently delirious, the tongue is dry and coated, the bowels constipated or relaxed, and the resemblance to an asthenic febrile disease like typhoid fever may be very close. The symptoms and the features by which the differential diagnosis is made will be better described in connection with the cases to be detailed.

A case of this kind, but without fever, was observed by Richardiere[19] in a young child of eleven years. The prominent symptoms in this were dropsy, stupor, delirium and headache, but there was no elevation of the temperature. Another case in which delirium occupied a prominent part in the clinical history of the case was recorded by Derignac[20], but this also was afebrile. Recently Josipovici[21] records a case of uræmia with the clinical features of an infectious disease, and Roch[22] published a contribution, to which I could not gain access, on the typhoid form of uræmia. The following cases of my own, however, suffice to indicate the nature of this form of uræmia.

Case VII.—T. P., aged seventy-three years, was admitted to my care, complaining of great heaviness and torpor. There was nothing of interest in his family history. He had had Chagres fever in South America many years before. Five years before the present illness he had an attack of unconsciousness, which lasted several hours. Since that time he had had frequent attacks of shortness of breath, sometimes very extreme, and cough, with frothy expectoration. There was also considerable epigastric soreness.

On admission the man was in a stupid condition, and there was considerable dyspnœa. The tongue was dry and covered with a brown fur; the bowels were a little loose; the pulse was slow and tense. Little urine could be obtained, but it was decidedly albuminous. On physical examination a rather high grade of pulmonary emphysema was determined, and there were besides soft, moist râles throughout both lungs. The heart-action was irregular, and the size of the organ difficult to determine on account of the emphysema of the lungs. The skin of the patient was dry and harsh; the temperature normal.

In the afternoon the patient began to wander in his mind, and there was slight fever. During the night there was very decided delirium, and the man could be kept in bed only with great difficulty. These symptoms persisted for two weeks, after which the patient died. The only new symptom was vomiting, which was noted one day. The prominent features of the case were the continuous delirium, the great depression, the restlessness, the dry-coated tongue, all of which gave the case a decided resemblance to typhoid fever on casual examination. There was, however, no enlargement of the spleen; there was no eruption of any kind, and the diarrhœa was not of the usual character met with in this disease. The pupils were small; the urine was constantly decreased in amount. Death occurred after two weeks of practically the same symptoms, apparently from exhaustion.

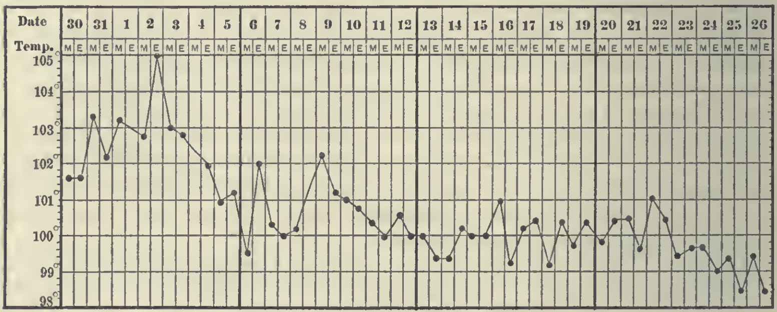
Autopsy. Emaciated old man; chest of the barrel-shape character. On opening the thorax the heart was seen to distend the pericardial sac, and on removal was found greatly hypertrophied, the wall of the left ventricle being two inches thick. There was no valvular disease of any kind. The heart weighed twenty-two ounces; the lungs were slightly œdematous; the kidneys were small, rather light in color, and the left contained a small retention cyst. On section the cortical substance was found to be of a light color and seemingly very fatty; the vessels in the kidney substance were patulous and stiff. The capsule was somewhat adherent. Weight of the kidneys: left, three and one-half ounces; right, six ounces.

The temperature in this case was never high, though on several occasions it passed 99° F.; but the other symptoms were so decidedly typhoidal that I venture to include it in the group of slow febrile uræmia.

A second case is more striking and deserves to be reported in detail:

Case VIII.—Mrs. S. was admitted to the gynecological wards as a supposed case of sepsis on July 30, 1894. She passed through a normal labor two months previously, and seemed to have recovered when the present condition of fever and depression was developed. On admission to the hospital the temperature was 101.6° F., the respirations 34, and the pulse 100; the patient was in a stuperous or almost comatose condition, there was occasional twitching of the hands and feet, especially on one side, and the body was covered with an eruption of sudemia and miliaria. The tongue was coated but moist. Physical examination revealed a rather harsh form of inspiratory murmur, but no other indication of pulmonary disturbance. The pulse was quite tense, and the second aortic sound was accentuated, but there was no murmur. The pupils were about normal in size and somewhat sluggish in action; the abdomen was flat—there was no pain or tenderness; the spleen was not enlarged; the bowels had been costive for several days. There was a urinous odor about the patient which was not decided, but still suggestive. The urine was scanty and had a specific gravity of 1018; it contained abundant albumin and hyaline and granular casts in very large numbers. The provisional diagnosis of uræmia was made, and the patient was ordered Rochelle salts in hourly doses of a drachm each, with the result that she had twenty large, watery stools in the next twenty-four hours. Very soon the stuperous condition cleared away, the pulse softened, the respirations grew more regular and natural in sound, and the twitching ceased entirely.

Chart III.



Further examination of the patient was now made. The blood was found to contain 4,300,000 red corpuscles and 17,400 leucocytes. The stained blood showed about the same proportion of lymphocytes, large and small, polynuclear elements and eosinophilous forms in a count of several hundred leucocytes.

On vaginal examination a contracted, hard, and slightly retroverted uterus was discovered, and there was no vaginal discharge. Abdominal examination still continued negative. The urine still presented the same large albuminuria and abundance of casts. The temperature was kept under control by sponging, which was repeated twenty-three times in the first three days. After this time no more sponging was needed. With the improvement in the patient's general condition there was a subsidence in the rapidity of the pulse and a fall in the temperature. After the fourth day the former fell to between 60 and 80 in the minute. The respirations continued rapid, but were far more natural in character. There was no more twitching. On August 10th there appeared a painful swelling of the calf of the left leg. This extended upward along the line of the femoral vein, which could be felt as a hardened cord. There was some slight coldness and blueness of the foot, but under treatment by rest, elevation, and sedative applications, all symptoms sudsided after a few days.

The patient's general condition improved immediately after the first thorough purgation, and still more after the administration of digitalis, beginning August 3d. The albumin gradually decreased in amount, and was sometimes absent entirely. When the patient was finally discharged there were neither casts nor albumin. The urine was examined for pepton with negative result. The blood at the second examination showed 3,300,000 red corpuscles and 31,200 leucocytes, with 70 per cent. of hæmoglobin.

Clinically this case suggested three possibilities: typhoid fever, puerperal sepsis, and uræmia. The diagnosis seemed to me to rest with the last condition. The appearance of the patient at once, however, suggested typhoid fever, and so strikingly that it was more difficult to eliminate this than the clinical report would indicate. The absence, however, of splenic enlargement, of intestinal symptoms, of rose spots, and the presence of distinct leucocytosis were points of considerable importance in the diagnosis. Of course the possibility of primary typhoid fever with secondary nephritis and consequent uræmia made the evidences of uræmia, that were unmistakably present, of no value in the exclusion of typhoid fever. The frequency of phlebitis and thrombosis in typhoid fever and their infrequency in nephritis would, of course, have some value in the diagnosis. I find, however, in the records of Prof. Tyson, at the University Hospital, a case of pure nephritis in which femoral thrombosis and gangrene developed while he was under observation in the hospital. The points indicated, however, served to set this disease aside, and the subsequent history of the case was confirmatory. The question of puerperal sepsis was perhaps even more troublesome. There was not, it is true, any evidence of gross infection with uterine or parauterine disease, since the gynecologist reported the uterus and its appendages normal; but the possibility of infection without marked local reaction, and with particular or sole involvement of the kidneys, as in some of the reported cases of infectious nephritis, required careful consideration. It was to be remembered in the first place that the diagnosis was concerned with the state of the patient at the time of her entrance into the hospital rather than with the determination of the original cause of her disease. There was undoubtedly a condition of acute nephritis, possibly of infectious origin; but the question to be decided was whether the associated symptoms were due to uræmia or to infection, no matter whether the primary nephritis were infectious or not. My opinion of this matter was very promptly formed. The woman was undoubtedly uræmic, as the condition of the mind, the twitching, the odor of the patient's skin and breath, and the scanty albuminous urine indicated. The effect of treatment served only to strengthen this opinion, for almost at once, after the first thorough purgation, the stupor, twitching, and odor disappeared, as might be expected in uræmic conditions, but scarcely in pure sepsis. I say nothing of the subsidence of the temperature, though I regard this also as significant, for the reason that it is my present purpose to establish the significance of fever in uræmia, rather than to form deductions from its presence or absence. After the first decline of the fever and subsidence of the uræmic symptoms it will be noted that there was a continuance of a milder degree of fever. This may have been due to lingering uræmic intoxication or to the continued existence of infection or of an inflammatory condition of the kidneys. It seems to me not in the least unlikely that the last assumption may have considerable foundation, but it is impossible to settle the question definitely. The earlier typhoidal symptoms, however, seem undoubtedly to have been uræmic, since they disappeared so promptly and with such exact correspondence to the degree of purgation; the substratum of infectious nephritis, with the fever proper to it, would not be influenced in the same prompt and decided manner, and, would therefore, remain after the removal of the uræmic element. The idea of sepsis entering even into the causation of the nephritis itself seems to me to be negatived by the fact that the labor was normal and had preceded the first indication of kidney trouble by fully two months; and still more by the fact that the patient presented none of the usual indications of sepsis.

SUMMARY.—Fever may occur in the course of Bright's disease under three conditions: 1. At the onset of acute nephritis as a result of the infection or intoxication causing the disease, or of the inflammatory or degenerative lesions in the kidney themselves; 2, in the course of acute or chronic Bright's disease as a result of various complications; and, 3, in uræmia. The fever associated with uræmia may be sudden and pronounced, and associated with coma, delirium, or convulsions—eclamptic fever; or it may be more general, more lasting, less marked, and associated with typhoidal symptoms—slow uræmic fever.

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RETRO-POSITION OF THE UTERUS.

By George W. Jarman, M.D.,
of New York.

Although the writer uses the word retro-position in the title of this paper, he is convinced that it is not the term which most correctly designates the condition under consideration.

Nearly all authors who describe this displacement of the uterus use the term retro-position to express not only this, but another malposition, namely, retroversion, which has nothing in common with the one under consideration.

It is needless to say that this usage of a term to describe two very different positions of the uterus can result only in confusion. The writer would use the word retrocession as expressing more perfectly the real position than retro-position. Retrocession carries with it no idea of any turning of the uterus around a transverse axis. It simply means that the uterus has receded toward the sacrum.

Schultze, Winkel, Hart and Barbour, and Pozzi, all speak of this malposition, yet in so meagre a manner as to leave one to suppose that it is not only very infrequent, but that few symptoms accompany it. From an experience extending over five years in one of the largest gynecological clinics in this city, the writer has found that retrocession of the uterus existed in the proportion of one to eighteen, where malposition of the uterus was diagnosed, and that symptoms so marked depended upon this position that treatment was desired.

The writer bases the deductions in this paper upon his observation of sixty-two patients with retrocession.

Inasmuch as the utero-sacral ligaments and the peritoneal surfaces of Douglas's pouch are so important in the production of this displacement, it will be necessary to make slight reference to their anatomy.

"The utero-sacral ligaments are peritoneal folds, two in number, inclosing connective tissue and unstriped muscular fibre, passing from the lower lateral part of the body of the uterus outward and backward toward the second sacral vertebræ" (Hart and Barbour). They form the lateral boundaries of the Pouch of Douglas. The sacral attachments of these ligaments is on a higher plane than their uterine ends, and if they become shortened the uterus is not only drawn backward, but is also lifted upward. The lymphatics of the vagina, cervix, and uterus are very numerous and complex, and it seems almost impossible, from an anatomical standpoint only, to determine their distribution. According to Sappey, the lymphatics of the upper three-fourths of the vagina and cervix enter the hypogastric glands which lie subperitoneally in the space between the external and internal iliac vessels. Le Bec, however, holds that the lymphatics from these structures pass out underneath the broad ligaments to the obturator gland of Guérin.

Recognizing how very rich the pelvic organs are in lymphatics, and bringing to bear the assistance of clinical observation, it would seem that it is not paradoxical to state that both authorities are right. We all see instances of inflammatory exudate following laceration of the cervix with septic infection, where the extension is sometimes in the broad ligament, and again retrouterine. This indeed seems to offer the true explanation of the inflammation which is found to exist in the utero-sacral ligaments. The cervical mucous membrane becomes inflamed, and septic material travels through the lymphatics which lie underneath the peritoneal covering of these ligaments, and they in turn become inflamed. This process may go on so slowly that the patient will complain only of backache, and, attributing it merely to overexertion or to some other possible cause, may not even seek treatment. It is only after secondary contraction, which follows this new infiltration of connective tissue, takes place that the real condition of the retrocession exists. (See Figs. 1 and 2, showing the normal and retroceded uterus.)

Fig. 1.

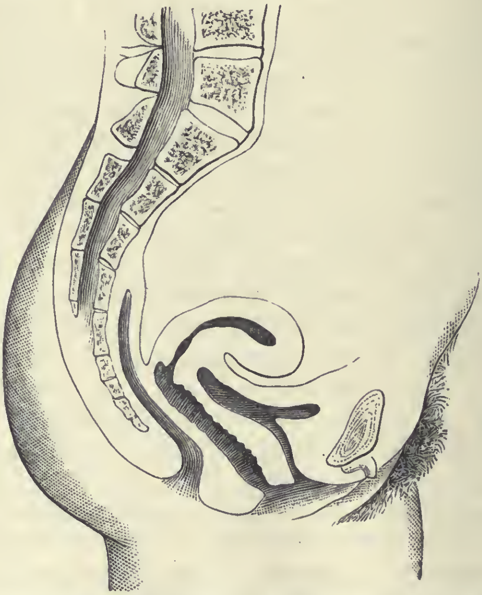

Diagram of vertical mesial section of female pelvis, showing normal distance between uterus and sacrum. Bladder empty.

Should the patient possess an unusually long cervix, the condition of pathological anteflexion will be induced by the contraction of these ligaments. This is perfectly easy of explanation when we consider that the uterus is constantly subjected to intra-abdominal pressure which tends to force the fundus of the normally placed organ forward toward the pubes, while the contractile power of the vagina tends to force the cervix in its own axis, which is nearly at right angles to that of the body of the uterus. Hence, should the cervix be abnormally long, the leverage will be increased so that it must assume the axis of the vagina.

It is the writer's belief that it is simply because operators have overlooked this retrocession and have given their entire attention to one of its frequent effects, namely, anteflexion, that such poor results have been obtained from the treatment of so-called cases of anteflexion. The recent operation devised by Dr. E. C. Dudley in reality shortens the intravaginal portion of the cervix, hence decreases the leverage, also affords free drainage for the endocervicitis, and it seems quite possible that this would explain, at least in some of the cases, the marked relief obtained. On the other hand, viewing the subject from the standpoint that the retrocession is so frequently the cause of the anteflexion it is not surprising that failure to relieve the symptoms so often follows even extreme divulsion and tamponade. It has been said above that the uterus is not only drawn backward by reason of the shortened utero-

FIG. 2.

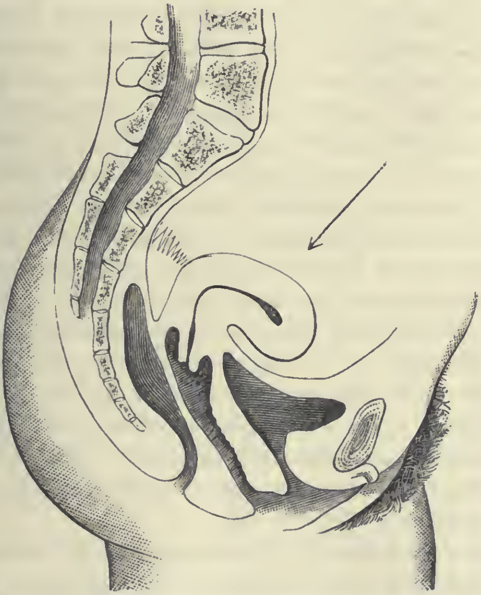

Diagram of vertical mesial section of female pelvis, showing contracted utero-sacral ligament, with uterus in the position of retrocession.

sacral ligaments, but that it is also lifted upward, nearer to the brim of the pelvis, inasmuch as the sacral attachment is on a higher plane than the uterine.

This mechanical elevation of the uterus deprives it of the natural support offered by the floor of the pelvis. In this way these already inflamed ligaments are forced to sustain more weight than when the uterus is in its normal position. The utero-sacral ligaments receive their nerve supply, in common with the uterus, through the sympathetic system. Branches from the hypogastric plexus, which lies between the common iliac arteries, reinforced by branches from the lumbar and sacral ganglia and sacral nerves, form the inferior hypogastric plexuses, and from these filaments pass to the utero-sacral ligaments.

Pain in the sacral and lumbar regions is the most constant symptom associated with retrocession. This pain is often described by patients as being similiar to that which they suppose they would experience if the back was broken, their expression being a "back-breaking pain." Standing, or in fact whenever the patient assumes the upright posture, increases this pain. It would be difficult to understand why this should not be the case when we remember the increased weight which the ligaments are called upon to support. Women who are compelled to do their own work and lift heavy weights will suffer more than those who can assume the recumbent posture more frequently. Again, any constriction around the waist of patients with this malposition will intensify this pain by increasing the intra-abdominal pressure. Sterility existed in nearly all the patients who came under the writer's observation. That this condition is due to the position of the uterus is not claimed, but rather that the most frequent cause of the inflammatory process in the utero-sacral ligaments, namely, endocervicitis, seems the most plausible explanation of the sterility.

Vesical irritation is another symptom which accompanies this displacement. That this should be the case can readily be understood, if the changes in position of the normal uterus depending upon the contents of the bladder be borne in mind.

When the uterus has receded from its midway position between pubes and sacrum, it must of necessity render its anterior attachment more tense.

The vagina will be found unusually deep and both anterior and posterior walls overstretched.

If the cervix uteri is long, it will be found in the axis of the vagina and forming an acute angle with the body of the uterus. Any attempt to move the uterus will cause the patient pain, which she refers to the back. Making traction on the cervix with a tenaculum, with the examining finger in the posterior fornix, will reveal the fact that the uterus has lost its normal mobility, and at the same time the tense utero-sacral ligaments can easily be made out. They will appear as two diverging cords attached to the posterior surface of the lower uterine segment, passing upward, backward, and outward. The uterus is frequently found to be in marked anteversion, caused by the round ligaments drawing the fundus forward. It is almost impossible to mistake this condition for any other.

Any inflammatory exudate in the cul-de-sac of Douglas may simulate retrocession, but the uterus will be more firmly fixed and will not be so near the sacrum. Spasmodic contraction of the ligaments of the uterus, a condition not infrequently observed in hyperaesthetic patients, might possibly be mistaken for retrocession. An examination under chloroform would reveal the true condition.

Inasmuch as the condition which produces retrocession of the uterus is chronic, the non-operative treatment must be prolonged, if satisfactory results are to be obtained.

The cervical canal should be examined and the cervical endometritis relieved. Thorough curettage under local anæsthesia offers the best means for rapidly disposing of this condition. If the cervix is abnormally long it should be amputated. Lifting the uterus up, so that the strain on the utero-sacral ligaments is lessened, will relieve the patient's symptoms to a great extent. This may be done either with the tampon suitably medicated or else with the retroversion pessary. It is not always possible to use the latter until after the tenderness of these ligaments has been reduced. The writer has not seen any good results from hot douches in the treatment of these cases. Chloral hydrate solution in glycerin, in proportion of two parts to twenty, applied by means of the tampon, having a distinct analgesic effect, has relieved the pain of which these patients complain more certainly than any other local treatment.

Massage is one of the surest methods of curing the patient of retrocession. I do not mean in this instance the ordinary pelvic massage, but the actual stretching of the contracted ligaments. It will often be necessary to restrict treatment to less harsh methods until the local tenderness is somewhat abated. As soon as the patient will bear it, and selecting a time at least four days distant from the menstrual period, it can be employed. The vagina, cervix, and cervical canal should be rendered as aseptic as possible, and with a double tenaculum the anterior lip of the cervix can be grasped. This procedure in reality produces very little pain on account of the insensitiveness of the cervix. Making traction on the tenaculum, with the examining finger of the other hand in the posterior vaginal fornix, will put these shortened ligaments on even greater tension and permit the operator to press his finger against them both transverse and laterally. The amount of force which can be exercised will be limited by the degree of pain which is produced, it being advisable to stop short of severe pain. Gentleness and persistence will accomplish far more than harsh handling. It is needless to say that in this, as in other forms of pelvic massage, the operator must be careful not to let his hand come in contact with the vestibule or clitoris.

Although it is not possible for the writer to prove the statement, yet clinical experience has demonstrated to his own mind that the red iodide of mercury, administered internally, has been of marked benefit to patients with retrocession. The only explanation possible is that it stimulates the lymphatic system and causes it to take up the products of the inflammatory process. At any rate he has made use of it in quite a number of cases, and has satisfied himself that it has been at least an adjuvant in the treatment of retrocession.

The bowels should be kept active. Electricity has decided pain-relieving power in these cases and should not be overlooked. Where, from lack of time or the impossibility of securing the regular services of a physician, local treatment becomes impossible, or where such treatment fails to bring about the desired relief, operative methods will be advisable.

Since the revival of the vaginal operation for the relief of abnormal conditions of the pelvic organs, it has been demonstrated that these ligaments can be cut with perfect safety.

In performing vaginal hysterectomy, as soon as these ligaments are divided, the increased mobility of the uterus is marked. The same thing is found when doing this operation by the abdominal method; the uterus can often be raised into the abdominal incision after its posterior attachments have been liberated, whereas previous to this procedure the organ may have appeared almost fixed.

There can be almost no danger in the operation for the division of the utero-sacral ligaments through the vaginal route. Under strict antiseptic precautions a transverse incision, one inch in extent, through the posterior fornix, can be made and Douglas's pouch opened. Traction on the cervix will render the ligaments tense and their location simple. With the guidance of the index finger their anterior attachment can be cut with blunt-pointed scissors. Hemorrhage from this source would be slight and under perfect control. The traction of the vaginal walls is sufficient to hold the uterus forward during the process of recovery. The incision through the fornix could be closed with sutures, as is done following vaginal ovariotomy. The writer had an opportunity of witnessing a very recently similar procedure in the hands of Prof. Henry C. Coe. In this case there was a small fibroid immediately behind the uterus, apparently attached to one of the utero-sacral ligaments. During the process of its removal it was necessary to cut these ligaments. As soon as they were divided the uterus sprang forward to its normal relationship with the pubes. It had been in marked retrocession. The case demonstrated the ease of access to these ligaments through the posterior vaginal vault.

The writer would draw the following conclusions:

1. That retrocession has been too often overlooked in the explanation of pelvic pain.

2. That the condition of the utero-sacral ligaments must be taken into consideration in the treatment of anteflexion.

3. That this condition can easily be relieved by operative measures, if local treatment does not succeed.

AN INVESTIGATION INTO THE SO-CALLED LYMPHOID NODULES OF THE LIVER IN ABDOMINAL TYPHUS.

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The pathological changes met with in the liver of those who have died of typhus abdominalis have, for a long time, attracted the attention of investigators. Perhaps to Friedreich[1] should be given the credit for the discovery of certain circumscribed nodular formations which he described as occurring in the liver of a girl, twenty-one years of age, who had died of typhoid fever. He found, in the neighborhood of the coarser bands of stroma, collections of cells which could not be seen with the naked eye, but which, viewed microscopically, consisted of round and partly irregular cells imbedded in the connective tissue of the organ. While this description is not complete, since Friedreich only saw these collections of cells in the interstitial connective tissue, yet it is, we think, sufficiently accurate to justify the belief that he saw what E. Wagner,[2] three years later, so minutely described. The latter's classical description of the hepatic lesions seen by him in five patients who had died of typhus abdominalis has scarcely been added to up to the present time. As regards his first case, Wagner describes the liver as of normal size and anæmic in appearance, somewhat softened, and with the outlines of the lobules obscure. He saw over all portions of the organ quite numerous, small areas, which were just on the limit of visibility, of a gray color, and fairly solid in character. This refers to the naked-eye appearance. Upon microscopical examination these spots were found to be round, oblong, sometimes irregular, serrated and biscuit-shaped, the majority of them occupying the actual parenchyma of the organ, and replacing the hepatic cells. Now and then they invaded the interlobular connective tissue. They consisted of closely lying groups of small, round and oval refractive nuclei; in some places, on the periphery of the area masses of these nuclei, of pointed shape, projected into the surrounding liver tissue. Wagner was of the opinion that these nuclei were derived partly from the cells of the interacinous connective tissue, and that in part they had their origin within the lobules. He was unable to completely demonstrate the manner of production last mentioned, but thought that these nuclei owed their origin to the nuclei of the liver cells. In a second case of typhoid fever, Wagner[1] saw these fine, barely visible, sharply circumscribed grayish specks over all parts of the cut surface of the liver. As a rule they were immediately on the periphery of the small portal veins, and consisted of albuminoid molecules between which small round refractive nuclei were quite regularly distributed, and in contrast with the central part of the area, which appeared to consist of irregular particles, the periphery was largely made up of round nuclei.

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[1] Ein neuer Fall von Leukamie, Virchow's Archiv, 1857, Band xii. S. 53.

[2] Beiträge zur pathologischen Anatomie der Leber bei Abdominal Typhus, Archiv d. Heilkunde, 1860, Band i. S. 322.

The third case investigated by Wagner[2] is of interest in connection with our own investigations. The patient had recovered from an attack of typhoid fever, but had died from some other disease two and a half months later. The characteristic nodules were not found in this case, and the inference is drawn that they had been present, but had entirely disappeared, their place being probably taken by a new formation of liver cells.

Hoffmann,[3] referring to the previous investigations of Wagner, states that he has also found in a considerable number of cases of typhoid fever small grayish nodules in the liver, and says that in most cases it requires close inspection in order to see them with the naked eye; that in some cases they are quite distinct, and on the cut surface, appear as flat elevations; microscopically they appear as round conglomerations of small round cells and nuclei, resembling the lymphoid nodules found in the peritoneum. He states that their location is, in most cases, within the lobules, and close to one of the small portal spaces. He found, almost without exception, a diffuse infiltration of cells which followed the ramifications of the portal vein. He regards them as lymphoid cells which have wandered in from the portal vein. Of 250 cases examined, he observed these nodules in the liver in 38, and in 14 of the 38 the nodules could be seen with the naked eye.

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[1] Die Körnchenbildung in der Leber, Arch. d. Heilkunde, 1861, Band ii. S. 103-114.

[2] Beiträge zur Pathologie und pathologischen Anatomie der Leber, Deutsches Archiv für klin. Med., 1883-4, Band xxxiv. S. 520-537.

[3] Untersuchungen über die pathologisch-anatomischen Veränderungen der Organe beim abdominal Typhus, Leipzig, 1869, S. 221-222.

Orth[1] states that the microscopic gray nodules found in the liver of typhus abdominalis are of the same formation as those seen in leukæmia and lymph adenomata.

Fraenkel and Simmonds,[2] while studying the hepatic changes in abdominal typhus, always found lesions which they considered to be intimately connected with the disease, viz., small cell infiltration of the connective tissue, and those peculiar formations generally known as lymphomata. They describe two forms which they think are deserving of the latter term: First, those areas which consist of closely packed small, round cells, amongst which may be recognized, here and there, liver cells. Secondly, those in which the round cell accumulation is less close, and which appear to consist largely of the remains of poorly staining liver cells. There are also small, circumscribed areas of liver tissue, in which the protoplasm and nuclei of the cells only stain imperfectly, or not at all, and which do not deserve to be designated as lymphomata. They are inclined to consider this latter form as one of coagulation necrosis. They are further of the opinion that in the beginning the change is one of circumscribed degeneration, and that later there takes place an accumulation of round cells within the necrotic area. They regard as improbable any direct connection between the presence of typhus bacilli and these formations, although they once found a clump of the bacilli within an affected spot.

Handford[3] states that in all fatal cases of typhoid fever examined by him there were found definite changes in the liver, in the form of parenchymatous and interstitial changes. The most characteristic change, though not constant, is the presence of small, round areas that stain imperfectly, that are crowded more or less thickly with leucocytes, and surrounded by a dense ring of cellular infiltration. The liver cells in the patches show cloudy swelling or more advanced degeneration. In more advanced stages the liver cells cannot be distinguished at all, and mingled with the leucocytes are irregularly shaped and spindle cells. In fact the tissue resembles an early stage of cicatricial tissue. In a third variety the patches cannot be distinguished from miliary abscesses. Handford regards the last as a septic hepatitis, due to absorption of septic particles from the intestine, while the former are due to capillary embolism. He is not satisfied that any specific bacillus is the cause of these lesions.

Siredey[4] states that during the course of the second week, and sometimes during the third week of typhoid fever, the microscopical appearance found on section of the liver is so peculiar and distinct that one can, in the majority of cases from these appearances alone, make a diagnosis of that disease. He describes the lesions as being scattered in various parts of the hepatic substance, and says that their form, location, and size are extremely variable; that while ordinarily round, they are sometimes ovoid or even star-shaped. They are oftener met with at the centre and in the midst of the lobule than at the periphery. He remarks that they offer the greatest analogy in their general shape to tuberculous nodules; but they do not present the distinct layers found in the latter, nor does one see giant cells, nor epithelioid cells. He states that he has never seen any tendency to caseation in these nodules; that they never include hepatic cells, and that the cells composing them are but little, if at all altered. He further says that although these nodules are perhaps special to typhoid fever, and that when once encountered in the liver the diagnosis is probable, yet there are other infectious maladies characterized by the migration of lymphoid cells into the liver, and that these can under certain circumstances present themselves as nodular conglomerations. He expresses the probable opinion that after convalescence the liver parenchyma is fully restored to its former integrity without any lesion being left behind.

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[1] Lehrbuch der speciellen pathologischen Anatomie, 1887, Band i, S., 954.

[2] Die aetiologische Bedeutung des Typhus Bacillus, Leipzig, 1886.

[3] "Hepatitis in Enteric Fever." Transactions of the Pathological Society of London, 1889, pp. 129–132.

[4] Contribution a l'études des alterations du foie dans les maladies infectieuses, Rev. de Méd. vi., Paris, 1886.

Legry[1] has contributed an interesting monograph to this subject. In addition to a study of the lesions found in the human liver in typhoid fever, he has injected pure cultures of typhoid bacilli into the mesenteric vein of rabbits, and afterward investigated the change, if any, found in the liver. The fact is worth mentioning in this connection, that our experiments on rabbits, carried out in much the same manner as Legry had done, were completed prior to our acquaintance with his monograph, and that while his experiments were attended with negative results as far as finding any changes in the rabbit's liver are concerned, our own experiments were followed by characteristic lesions, as will be later shown. He gives much the same general description as to the location of these nodules as Siredey had already done; but does not agree with him that they consist of lymphoid cells. He supports the conclusion that these nodules, which are found most often along the portal spaces, are always formed of nuclei, generally abundant, surrounded by a granular substance, which latter appears to result from the degenerated protoplasm of liver cells. He gives no definite opinion as to the source of these nuclei, but thinks that the nodules have a bacterial origin. He never found the bacilli within the nodules, but has found upon section, six times in eleven cases, characteristic clumps of typhoid bacilli. His experiments upon rabbits (two cases) gave no definite results.

It will thus be seen that each of the writers to whose investigations we have referred describe, with more or less particularity, certain nodular formations found in the liver of those who have died of typhoid fever.

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[1] Contribution a l'étude du foie dans le fievre typhoide. Paris, 1890.

Our own investigations have been carried on in the Pathological Laboratory of the Johns Hopkins University, and have consisted in a careful study, microscopically, of the livers of five patients who had died of typhoid fever in the wards of the Johns Hopkins Hospital. We have also injected pure cultures of typhoid bacilli into the mesenteric vein of rabbits, and afterward studied the lesions found in their livers.

Before we proceed to a description of the microscopic appearances we wish to state that although it is not always possible to distinguish with the naked eye the nodular formations which Wagner discovered microscopically, yet a patient search of the cut surface of the organ will generally be rewarded by finding here and there very small, roundish, grayish white specks within the lobules; sometimes they are quite abundant and easily to be seen—again just on the limits of visibility, and with difficulty found.

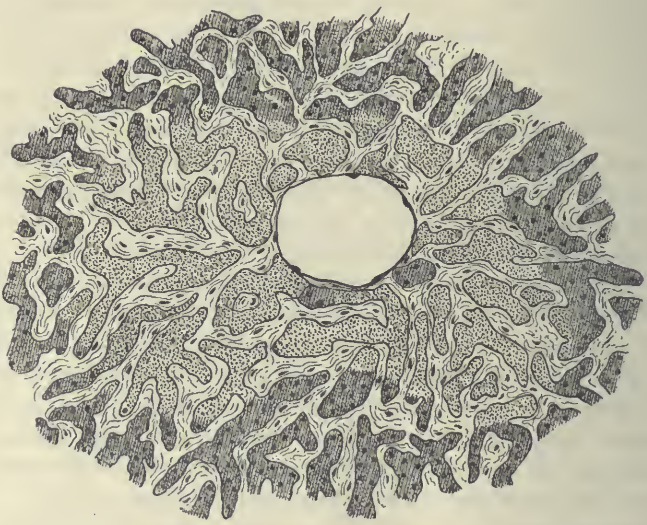
MICROSCOPIC APPEARANCE OF THE LIVER. In two of the cases studied by us frozen sections of the fresh liver were made. In addition to the well-marked fatty infiltration of the cells, the latter being generally filled with large fat drops, there were also to be seen within the lobules well-defined areas which contained many fatty granular cells situated in the midst of a coarse granular material. Within these areas there were also to be observed many irregular-shaped nuclei.

For the further study of the microscopic appearances the following method was used, viz.: Fresh portions of the liver were hardened in 95 per cent. alcohol, and afterward imbedded in paraffin or celloidin. Sections of these were then stained with Löffler's methylene-blue solution for ten to thirty minutes; then transferred to ¼ per cent. aqueous solution of eosin, where they remained from fifteen to forty-five seconds; next decolorized and dehydrated in absolute alcohol, cleared in oil of cloves or bergamot, and mounted in Canada balsam.

If, as is sometimes the case, we are unable to see with the naked eye the small whitish areas on the cut surface of the liver of typhoid fever, when we come to the microscopical examination of the organ we no longer experience any difficulty in finding them. If one has succeeded in obtaining a properly stained section a most striking picture is presented to the eye when examined with the low power, and that feature which will most quickly fix the attention is the presence of bright, sharply defined eosin-stained areas of various shapes and sizes, which are to be seen scattered plentifully throughout the section, and in almost every field. Sometimes these areas are almost perfectly round, more often oval, and generally irregular in outline. The sizes of these foci are as variable as their shapes, embracing now only a few liver cells, again involving as much as one-half or even the whole of a lobule. Their relative position is also very variable; sometimes we find them near the portal spaces—again in the midst of the lobule, and quite as often situated near the central vein. We have several times observed an area occupying the entire periphery of the central vein. It cannot be said, we think, that these areas stand in closer relation to the portal vein than to the hepatic spaces. If the section has been well stained there should never be any difficulty in picking out even the smallest necroses, since the contrast between the healthy cells, which are stained with methylene-blue, and the necrotic eosin-stained cells is always well marked.

The appearance of these areas is variable. Sometimes we see a spot involving as much as one-fourth of a lobule in which the liver-cells have apparently died *en masse*, but continue to retain their shape perfectly; even the demarcation between the individual cells can still be plainly made out. The beam-work of the cells will not be at all broken, but will be seen to be continuous with that of the surrounding healthy cells (Fig. 1). The capillaries of such an area will be found to be unaltered, or perhaps slightly dilated. Continuing the examination with the low power, we will most often fail to discover any nuclei whatever within the finely granular eosin-staining cells; and even with a high amplifica-

FIG. 1.

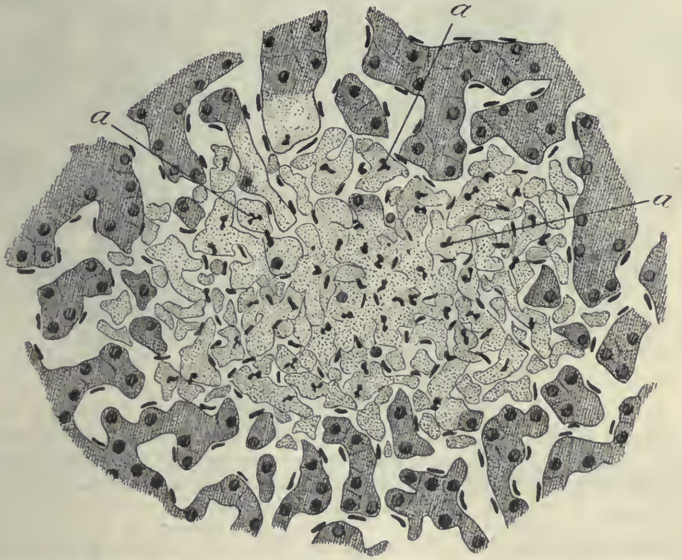


A necrotic area of the human liver of typhoid fever. The area of necrosis entirely surrounds the central vein of the lobule; the cells have lost their nuclei, but still retain their continuity with the healthy cells. Drawn with camera lucida, Bausch & Lomb 1/6 objective, Leitz ocular No. 4. Reduced ¼.

tion may only find within these cells minute particles of nuclear detritus. We have seen several such areas as the one now being described, in which there appeared no increase whatever of the cells within the capillaries situated between the rows of necrotic cells. In other instances we have found the capillaries to contain a considerable number of polynuclear leucocytes. Sometimes we have seen a marked increase of polynuclear cells within the capillaries, near the centre of the area; again, the largest number will be found about the periphery of the necrosis. We are inclined to regard the areas just described as probably the earliest form of the local parenchymatous degeneration. These are the areas which Frankel and Simmonds consider to have undergone coagulation necrosis, and which, in their opinion, do not deserve to be designated as lymphomata.

Far more frequently one will see areas wherein the liver cells no longer preserve the regularity of their framework, but have become displaced and have lost their shape. Some of these cells may still show pale and swollen nuclei, but the majority will have entirely lost their nuclei, and in their stead there will be discovered within many of the necrotic cells one or several polynuclear leucocytes (Fig. 2). The presence of the irregular and club-shaped nuclei within the necrotic cells of the area is one of the most striking and important features to be

FIG. 2.

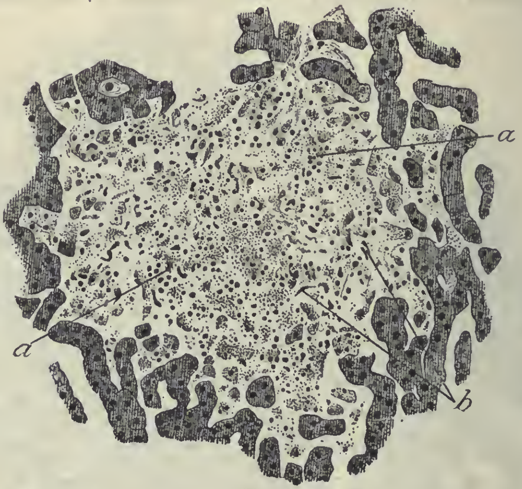


Necrosis of human liver in typhoid fever. *a*. Polynuclear leucocytes within the dead hepatic cells, which latter have in large part lost their shape. Camera lucida drawing, Leitz 1/12 immersion, No. 3 ocular. Reduced ¼.

observed. Although certain areas may show only a small number of such nuclei, as a rule they are found in great abundance. We have never, however, observed such an abundance of polynuclear leucocytes within a necrosis in the human liver as to give the picture of a miliary abscess such as is described by Hanford. Sometimes we find included within such an area, and completely surrounded by the necrotic cells, from one to a dozen or more apparently healthy liver cells which still preserve their nuclei, and which do not stain with eosin. These cells, as a rule, contain many fat drops, but in this respect do not differ much from the cells throughout the section.

In addition to the two varieties of areas described we will find others which have undergone yet further changes. Here the hepatic cells have quite disappeared, and are replaced by numerous small, round, deeply-staining nuclei, which crowd the area in all parts, intermixed with fewer oval, spindle-shaped nuclei (Fig. 3). In other words, the appearance is that of young connective-tissue, as mentioned by Hanford.

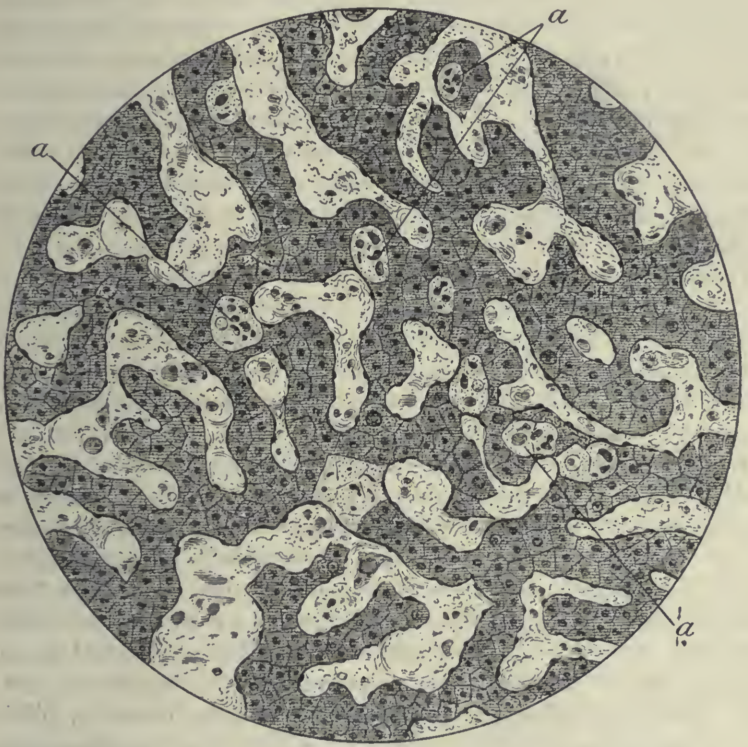
FIG. 3.



Later stage of necrotic area of human liver in typhoid fever. The cells have entirely lost their shape; many small round nuclei within area (*a*), and here and there a few spindle cells (*b*). Camera lucida drawing, Bausch & Lomb 1/6 objective, Leitz ocular No. 3. Reduced ¼.

Besides these larger areas of necrosis, we wish to invite attention to the smaller necroses which are found in the liver. We here refer to the necrosis of individual liver-cells. We have found these smaller necroses in each of the cases examined. In one case they were a prominent feature of the examination (Fig. 4). We find scattered here and there amongst the healthy cells of the lobule one or more cells whose protoplasm stains brightly with eosin, and whose nuclei have, as a rule, entirely disappeared. We will generally observe that such necrotic cells contain within them several irregular-shaped nuclei, which plainly mark the entrance of polynuclear leucocytes into them.

Fig. 4.



Necrosis of individual cells in human liver, typhoid fever. At *a* are seen one or more cells which have partially or entirely lost their nuclei and which contain polynuclear leucocytes. In this section the capillaries were much dilated. Camera lucida drawing, Leitz 1/12 immersion objective, No. 3 ocular. Reduced ⅓.

Relation of Bacilli to Areas of Necrosis. We have found characteristic clumps of typhoid bacilli upon section in each of the five cases examined by us; it was generally possible, by careful search, to find one or more colonies in nearly every section, the bacilli lying always within the capillaries. As to the relation existing between these clumps of bacilli and the necrotic areas, we have examined a great many sections from each case, but have only succeeded in finding the bacilli within the areas five times. Four times the colony lay just within the margin of the area; in the remaining instance we observed a capillary distended to twice its normal size by a large colony of bacilli, which was surrounded on all sides by necrotic liver-cells, so that the clump of bacilli occupied in this case the centre of the necrosis. We were at first inclined to believe that the finding of the colony of typhoid bacilli within the necrotic area was sufficient reason for assuming that the death of the liver-cells was due to the presence of the bacilli, or rather that the toxalbumin produced by the latter caused the death of the cells in their immediate vicinity. When, however, we had examined very many areas in which no bacilli could be discovered, and when we found colony after colony surrounded by liver-cells, which, to all appearances, were quite healthy, we were reluctantly compelled to leave in abeyance so plausible a theory. With the object, if possible, of coming to a final decision in this matter we made careful serial sections in two of our cases, but prolonged and careful search failed to discover any bacilli within these areas.

Considerable interest must attach to the final disposition of these localized necroses of the liver in those who have recovered from typhoid fever. One is struck with the large number of necrotic cells which must necessarily be removed and whose places must be filled by other cells. Siredey makes the rather surprising statement that during the third week of the disease these nodules no longer appear in the liver; as he believes that they consist largely of lymphoid cells which have been brought to the liver through the portal circulation, he supposes that by the third week they have already re-entered the general circulation. This supposed disappearance of the nodules during the period above mentioned is not borne out by observation, as we have found these lesions in the human liver as early as the second week of the disease, and as late as the seventh week after the attack had begun. Wagner states that they probably entirely disappear, and suggests a restoration of the tissue through a proliferation of the liver cells. While our investigations were being carried on we were so fortunate as to be able to examine microscopically the liver of a patient who had experienced an attack of typhoid fever about twenty-five years prior to death. This was the case of a woman aged about seventy years, who died of carcinoma of the ovary and was autopsied in the pathological laboratory of the Johns Hopkins Hospital. The clinical history of a former attack of typhoid fever was fully supported by finding in the lower ileum several large cicatrized areas, with raised, uneven edges. Microscopical examination of the sections taken from these old cicatrices showed that an ulcerative process had destroyed the mucosa in its entire thickness, and had extended down to the muscular layer. No muscularis mucosæ was to be seen; each ulcer had occupied the greater part of a Peyer's patch, and it was extremely interesting to observe that the follicles of Lieberkühn had been somewhat reproduced, these appearing as much atrophied follicles resting directly on the muscular layer. Equal interest attached to the microscopical examinations of the hardened sections of the liver, for, aside from the general atrophy of the liver cells (the patient was quite old), there were to be seen in almost every field from one to three circular, round, ovoid, or irregular-shaped areas of dense connective tissue. These were, as a rule, sharply defined, being situated sometimes near the portal spaces, again around the hepatic vein, and often *within the lobules;* so that as regards relative position they corresponded to the areas of necroses found in the liver of typhoid fever. Within many of these old areas of connective tissue, blood-vessels and bile-ducts had been reproduced. While it would not be well to attach too much importance to the localized areas of connective tissue found in the liver in this case, we yet consider it of extreme interest to find such an unusual form of cirrhosis in the liver of a patient who had so clearly passed through a former attack of typhoid fever.

LESIONS IN THE LIVERS OF RABBITS INOCULATED WITH PURE CULTURES OF TYPHOID BACILLI.—Blackstein[1] failed to discover any lesions in the liver of rabbits into whose circulation he had injected pure cultures of typhoid bacilli. Legry and Pavone[2] only found fatty degeneration of the livers cells and of the endothelial cells of the capillaries.

In order to throw further light upon the necrosis found in the human liver, we have injected pure cultures of typhoid bacilli into the mesenteric vein of rabbits, this procedure sufficing to carry the bacilli at once into the hepatic circulation, giving them an opportunity to exert their full effect upon the parenchyma of the liver. The cultures were in plain or one per cent. glucose bouillon, and were from twenty-six hours to twenty days old. The culture which was used for these experiments had been obtained from the spleen of a patient who had died of typhoid fever in the Johns Hopkins Hospital, and had been thoroughly tested as regards its growth on the customary media.

The method of procedure was as follows: The animal having been first etherized, a laparotomy was done under strict antiseptic precautions, and an injection of the culture was then made into one of the larger mesenteric veins by means of a sterilized Koch's syringe; the wound was next carefully closed with silk stitches, and celloidin dressing placed over the line of incision. Although we laparotomized thirteen rabbits, in only ten of these was the injection of the culture into the circulation satisfactorily done. In one of the three unsatisfactory cases the hemorrhage following the withdrawal of the needle was of such amount as to call for the use of a ligature, which was followed by hemorrhagic infarction of the bowel and premature death of the animal. In one case the culture was accidentally injected between the layers of the mesentery, and in one case an attempt was made to inject the culture into one of the smaller branches of the mesenteric artery, which was also followed by hemorrhagic infarction and early death of the animal. We will now give brief protocols of some of our experiments.

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[1] "Intravenous Inoculation of Rabbits with the Bacillus Coli Communis and the Bacillus Typhi Abdominalis," Johns Hopkins Bulletin, July, 1891, No. 14.

[2] "Nuovi Punti di vista nello studio della quistione del potere patogeno del bacillo del Tifo degli anamali da sperimento." Giornale Internacionale delle Scienze Mediche, 1888.

Experiment No. 1. May 12, 1891, 10 A.M. Small white rabbit; 0.3 c.cm. of a twenty-six hours' old culture of typhoid bacilli in plain bouillon injected into one of the larger mesenteric veins; May 14th, 10 A.M., forty-eight hours after injection, the rabbit was killed. No peritonitis; stomach contained a large quantity of food; moderate amount of fluid feces in small intestine; no enlargement of Peyer's patches or solitary follicles; spleen small, dark red; kidneys normal; liver shows beneath the capsule, on upper and lower surfaces a few roundish or irregular-shaped whitish nodules, 1 to 2 mm. in diameter; there are also to be seen many very minute yellowish dots beneath the capsule and on the cut surface of the organ. Frozen sections show the larger areas to contain coccidia; small areas, however, do not contain these parasites, but are crowded with many fatty granular cells. Cover-slips from blood, liver, spleen, and kidneys negative; cultures (gelatin plates) from blood, liver, and spleen show numerous colonies of typhoid bacilli; kidney plate negative. Hardened sections of liver stained with methylene blue and eosin show, in addition to the areas containing coccidia, many small foci of cell necrosis. These are situated within the lobules. The liver cells within the area have lost their nuclei; but the beam-work of the cells is as yet unbroken; while in some areas a few polynuclear leucocytes are seen within the capillaries; in others the capillaries, especially toward the centre of the areas, contain large numbers of these leucocytes, some of which have even wandered into the dead cells. No bacilli were found on sections.

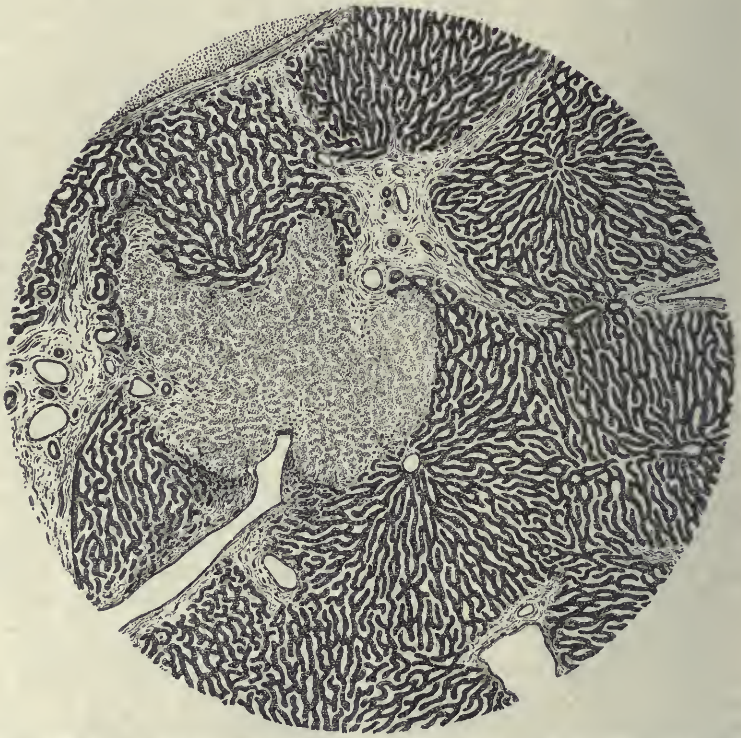
Experiment No. 2. May 19, 1891, 10 A.M. Small black rabbit; mesenteric vein injected with 0.2 c.cm. of a four days' old culture in plain bouillon. The animal appeared almost overwhelmed by the toxic effects of the injection and died at the end of twenty-three hours. Autopsy made after death; no peritonitis; stomach almost empty; small intestine contains a small quantity of fluid feces; mucous membrane not injected; no enlargement of Peyer's patches or solitary glands; cæcum and large intestine contained a small quantity of hardened fecal matter; the liver darkly congested and shows characteristic psorosperm nodules; no areas of necrosis apparent to the naked eye, either on the surface or on section; spleen slightly enlarged and dark; kidneys normal; no cover-slips were made; frozen sections of liver show marked fatty infiltration of the periphery of all the lobules; no necrosis discoverable except those containing coccidia; gelatin plates from liver, spleen, and kidneys, each give numerous colonies of typhoid bacilli; hardened sections of the liver do not show necrotic areas. Although Experiment No. 2 was negative, as far as regards the finding of necrotic areas, it is worth mentioning that a culture of the typhoid bacillus was obtained from the blood in the foregoing cases at the end of forty-eight and twenty-three hours respectively.

Experiment No. 3. June 24, 1891, 4 P.M. Medium sized rabbit; mesenteric vein injected with a 0.3 c.cm. of a twenty-six hours' old culture in plain bouillon. Animal killed June 29, 1891, 4 P.M. (at the end of five days). No peritonitis; stomach distended with food; spleen much enlarged, dark red; many small minute whitish necroses to be seen beneath its capsule; kidneys normal; liver contains a few coccidia nodules; no other areas of necrosis to be observed; frozen sections of the liver appeared to be normal in all respects, except the presence of coccidia above noted; small intestine contains a medium amount of fluid, yellowish feces; mucous membrane of ileum uniformly congested and extending up the gut to the distance of 14 inches above the ileo-cæcal valve there are to be seen eleven well-marked ulcerations; the largest ulcer involves an entire Peyer's patch and measures 14 by 21 millimetres; the others are small roundish oval ulcers and involve the solitary follicles; all of them contain a central slough, the necrotic process extending in several down to the peritoneal coat of the bowel; all have overhanging edges and show a distinct margin of congestion; large intestine normal; the mesenteric glands distinctly enlarged, and several show upon the surface, and upon section, small yellowish areas of necrosis; cultures from right ventricle, liver, spleen, mesenteric glands, and kidneys; the plates from liver and spleen show numerous colonies of typhoid bacillus, while those from the blood, mesenteric glands, and kindneys give a few colonies of staphylococcus citreus; hardened sections of the mesenteric glands and of the spleen give characteristic caseous areas of tuberculosis; numerous tubercle bacilli found on stained sections; hardened sections of liver normal; sections of the intestinal ulcers show, microscopically, a central necrosis extending down to and involving the peritoneal coat; this necrosis, in each instance, is densely surrounded by an area of polynuclear leucocytes; outside of these were seen a few epithelioid cells in the submucosa; repeated examinations ot stained sections of the ulcers failed to discover any tubercle bacilli whatever. With regard to Experiment No. 3, although the microscopical examination proved that the mesenteric glands were tuberculous, the latter condition was definitely excluded from the process, as seen in the intestinal ulcers. The absence of tubercle bacilli in these, the presence of a central area of necrosis surrounded by crowds of polynuclear leucocytes, the involvement of Peyer's patches and solitary glands in the ulcerative process, would we think, bear out the latter statement.

Experiment No. 6. July 2, 1891, 10 A.M. Medium-sized rabbit 0.2 c.cm. of a twenty-four hours' culture in 1 per cent. sugar bouillon injected into the mesenteric vein. Animal killed July 7th, 5 P.M. (three days, seven hours); stomach distended with food; small and large intestine normal; spleen not enlarged; kidneys normal; no necrotic areas found in the liver either on frozen or hardened sections; cultures from the blood negative; those from the bile, liver, and spleen give numerous colonies of typhoid bacilli.

Experiment No. 7. July 24, 1891, 4 P.M. Large black rabbit; 0.5 c.cm. of a thirty-six hours' culture in 1 per cent. sugar bouillon injected into mesenteric vein; after recovery from the anesthetic the animal showed symptoms of acute toxæmia; remained lying on its side with marked tremor of extremities for more than twelve hours; this passed off during the second day; July 29th, 4 P.M. (five days) animal killed; no peritonitis; stomach contains moderate amount of food; small and large intestine normal; spleen much enlarged, estimated to be three times its normal size, dark purplish-red, firm; kidneys normal; liver presents within its parenchyma, immediately beneath the walls of the gall-bladder, numerous yellowish, white, roundish necroses; walls of gall-bladder much thickened, bile pale, watery, non-viscid, and contains many minute yellowish floating particles; hanging drop made from bile shows a large number of highly motile rods, corresponding in size to the typhoid bacillus; cover-slips from the various organs negative; gelatin plates from bile, spleen, and liver give numerous typhoid colonies; plates from the blood and kidneys negative; microscopical examination of hardened sections of liver extending through the wall of the gall-bladder show distinct necrosis of the mucous membrane of the gall-bladder, with loss of substance, and in the parenchyma of the liver proper many small and large necroses involving the liver cells; these areas stained brightly with eosin; within the capillaries of several of the areas there are seen many polynuclear leucocytes; one such necrosis occupies almost an entire lobule.

FIG. 5.



Rabbit's liver, experimental typhoid fever. A necrosis involving parts of three lobules; animal killed on the seventh day after inoculation into mesenteric vein of a pure culture of typhoid bacilli. Camera lucida drawing, Bausch & Lomb objective 2/3, Leitz ocular No. 4. Reduced ⅓.

Experiment No. 8. August 14, 1891, 9.30 A.M. Large white rabbit; mesenteric vein injected with 0.4 c.cm. of a twenty days' old culture in 1 per cent. plain bouillon; August 21, 1891, 9.30 A.M. (seven days) animal killed; no peritonitis; stomach, large and small intestine presented nothing worthy of remark; spleen slightly enlarged, dark red; kidneys normal; liver presents, beneath its capsule and on section, numerous minute, yellowish-white necroses; bile green and viscid; cultures from blood, bile, liver, kidneys, and spleen positive; frozen sections of liver show many necroses, consisting largely of fatty granular liver cells; hardened sections of the liver show necroses, both large and small, resembling in all respects those found in the human liver of typhoid fever.

Experiment No. 11. August 31, 1891, 4 P.M. Large rabbit; injection into mesenteric vein 0.5 c.c. of twenty-four-hours'-old culture in plain bouillon; no symptoms of acute toxæmia. September 4th, 10 A.M. (four days after injection), animal killed. No peritonitis; stomach and intestines normal; spleen not enlarged; kidneys normal; liver, numerous very small, round, yellowish necroses under capsule on the upper and lower surface and on section; bile, green, viscid; cover-slips from the organs negative; gelatin plates from blood, liver, spleen, and kidneys negative; plates from bile contained numerous typhoid colonies; frozen sections from liver showed diffuse fatty degeneration of liver cells and many small necrotic foci; hardened sections gave most characteristic foci of cell death, and there was seen within a branch of the portal vein an extensive thrombus.

Experiment No. 12. August 31, 1891, 5 P.M. Large rabbit; 0.5 c.c. plain bouillon culture, twenty-four hours old, injected into mesenteric vein; killed September 13, 1891 (fourteen days after injection); no peritonitis; spleen dark red and much enlarged; stomach and intestines normal; kidneys very pale on section; striation well marked; liver, numerous minute, sharply defined, yellowish-white areas under capsule and scattered through the liver parenchyma; frozen sections show diffuse, fatty degeneration of liver cells, and well-defined areas of necrosis; frozen sections of kidney show marked fatty degeneration of the epithelium of both the convoluted and straight tubes; cultures from blood and kidney negative; liver, spleen, and bile plates give numerous typhoid colonies; hardened sections of liver show many characteristic areas of cell necrosis.

Of the ten rabbits successfully injected into the mesenteric vein with pure cultures of typhoid bacillus, five gave positive results—that is, following this injection, at intervals varying from two to fourteen days, the animals were killed, and upon examination of the liver there were discovered well-defined, localized areas of cell necrosis.

Taken in connection with the localized lesions found in the liver of typhoid fever in man the changes brought about in the rabbit's liver are particularly instructive; for, although in the former it could not be positively determined just how much the presence of the bacillus coli communis contributed to the production of these necroses, we have obtained, in the latter, lesions in all respects identical with those found in the human liver by the injection of pure cultures of the typhoid bacillus, and where any action of the colon bacillus could be certainly excluded. The inference would appear to be a legitimate one that the typhoid bacillus is quite capable of producing the areas of necrosis which are so marked a feature in the human liver.

As in the human liver, so likewise in the rabbit's liver we find the essential lesion to be, first, a necrosis of the cells proper of the organ in localized areas, varying in size from a few cells up to an entire lobule, followed by the accumulation of polynuclear leucocytes within the capillaries of the area and their subsequent migration into the dead cells.

With regard to the relation of the bacilli to the experimentally-produced areas of necrosis, we have not succeeded in finding any bacilli present in the areas; nor have we found colonies of the bacilli on section of the rabbit's liver. Our experience has in this accorded with other workers in this line. The explanation for the failure to find the bacilli on section is most probably due to the fact that the tissues were subjected to the influence of hardening agents immediately after the animals had been killed. As is well known, Fränkel and Simmonds have shown that, by keeping the spleen and liver of rabbits which have been inoculated with typhoid bacilli for periods varying from twenty-four hours to three or more days, especially at thermostat temperature, the bacilli rapidly multiply, so that, whereas, immediately after the death of the rabbit it was with much difficulty that they could be found, at a later time numerous colonies were to be seen on sections of both liver and spleen. Bearing this in mind, it may be allowable to suppose that many of the colonies of typhoid bacilli found on section in the human liver have developed between the death of the patient and the time of subjecting the tissues to preservative agents. This may account for the fact that so many of the colonies are seen to be surrounded by apparently quite healthy liver cells.

To briefly summarize, then, the results of our study of the lesions found in the human liver following upon an attack of typhoid fever, we believe that we may draw the following conclusions:

1. That the term "lymphoid nodule," by which these localized lesions of the liver in typhoid fever have been heretofore generally designated, is an improper one, since it expresses an erroneous idea as to the origin of these peculiar formations.

2. That these so-called lymphomata are not composed of lymphoid cells, as the term would imply, which have wandered in from the portal vessels, but that, on the contrary, these focci represent well-defined areas of cell-death.

3. That in the earlier stages of the necrosis the nuclei which are found in such abundance in these areas are not the nuclei of lymphoid cells (Orth, Hoffman, Siredey), nor do they arise from the multiplication of the nuclei of the hepatic cells (Wagner, Hoffman), but owe their origin

in small part to the disintegration of the nuclei of the liver cells involved, and in greater part to the presence of polynuclear leucocytes which have wandered into the necrotic area.

4. That at a later stage of the process, when the liver cells have become quite broken down into granular detritus, the numerous small, round, and sometimes spindle-shaped nuclei which are observed along the margins of the area, or seen to have penetrated into its centre, are those derived from the connective tissue stroma of the organ (Wagner, Handford).

5. That thus it is probable that the areas of necrosis are replaced by well-defined areas of localized connective tissue.

6. That necrotic areas, resembling in all respects those found in the human liver in typhoid fever, can be reproduced experimentally in the rabbit's liver by the injection into the mesenteric vein of a pure culture of the typhoid bacillus.

7. That although these areas of necrosis in the liver owe their origin to the action of the typhoid bacillus, it has not been possible to more definitely determine in what way this cell death is brought about—that is to say, whether it is due to the immediate presence of the bacilli within the areas of necrosis, or is caused by the action of the so-called toxalbumins which are assumed to be present in the general circulation. It would seem reasonable to suppose that the latter explanation is the more probable, since it is possible to produce well-defined areas of necrosis in the liver of guinea-pigs by the injection of toxalbumins alone, as has been done by Welch and Flexner[1] in diphtheria, and more recently by Flexner[2] by means of minute injections of ricin and abrin.

In conclusion, we desire to express our warmest thanks to Professor Welch, of the Johns Hopkins University, and Professor Councilman, now of Harvard University, for the valuable suggestions made from time to time during the progress of this investigation, and to state that the success attending the experimental work was largely due to their kind advice and assistance.

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[1] Johns Hopkins Hospital Bulletin, 1892, vol. iii. No. 20.

[2] "The Pathologic Changes Caused by Certain So-called Toxalbumins," Medical News, August 4, 1894.

A CLINICAL STUDY OF THREE CASES OF PERSISTENT ABSENCE OF THE GASTRIC SECRETORY FUNCTION.[1]

By D. D. Stewart, M.D.,
of Philadelphia;

In reading Fenwick's admirable lecture on "Atrophy of the Stomach," published a quarter of a century ago, in which he records the gastric condition observed post-mortem in certain cases of this affection, the diagnosis of which in life could be but conjecture,[2] one cannot but feel a sense of gratitude and admiration toward that pioneer in gastric research, Leube, who has made comparatively easy the recognition of diseased gastric processes in life by the aid of the stomach tube and the application of physiological chemistry to their elucidation. Fenwick's studies dealt with the association of cachectic conditions such as originate carcinoma, as of the breast, and certain profound anæmias, otherwise primary, and atrophy of the gastric tubules, a relation which, as concerns the latter, was first suggested by our own Flint[3] some years previously. Since that time this connection has been recorded by many, among whom, in passing, may be noted Nolen[4], Quincke[5], Brabazon[6], Henry and Osler,[7] Ewald,[8] Lewy,[9] and Kinnicutt.[10] These recognized the association of anæmia and the cachectic states with atrophy of the tubules, but their observations as concerns the stomach were confined to post-mortem findings. The application of the stomach tube to diagnostic purposes has since rendered the recognition of the gastric disorder indicative of atrophy less difficult, and given impetus to the more exact study during life of conditions suggestive of atrophy of the mucosa and allied affections of non-secretory activity. Cases of atrophy of the tubules were now not infrequently reported,[11] its diagnosis in certain of which was not alone supported by post-mortem finding, but on the result of chemical examination of the gastric contents in life. Cases in which a clinical diagnosis of atrophy was thus made were reported by Grundzach,[12] Ewald,[13] Jaroski,[14] Boas,[15] Rosenheim,[16] Litten,[17] Einhorn,[18]

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[1] Read before the College of Physicians of Philadelphia, April 3, 1895.

[2] And in which the lament occurs, "Unfortunately we are not able to collect and subject to chemical tests the gastric fluid during life as we can the urine."

[3] American Medical Times, September 15, 1860.

[4] Centralb. f. d. med. Wiss., Bd. xx.

[5] Volkmann's Samml. klin. Vortr., No. 100.

[6] Brit. Med. Journ., July 27, 1889.

[7] Amer. Journ. Med. Sci., April, 1886.

[8] Berl. klin. Woch., 1886, No. 32.

[9] Ibid., No. 4, 1889.

[10] Amer. Journ. Med. Sci., October, 1889.

[11] Such as Reigel's: Zeitschrf. f. klin. Med., Bd. xi. u. xii. Grundzach's: Berl. klin. Woch., 1887, No. 30. Wolff and Ewald's: Id., 1887, No. 39. Boas's: Münch. med. Woch., 1887, Nos. 41 u. 42.

[12] Berl. klin. Woch., 1887, No. 30.

[13] Id., 1887, No. 30, 1892, Nos. 26 u. 27.

[14] Wiener med. Woch., 1886, Nos. 49–52.

[15] Münch. med. Woch., 1887, Nos. 41 u. 42.

[16] Berl. klin. Woch., 1888. Nos. 51 u. 52.

[17] Zeitschr. f. klin Med., Bd. xiv.

[18] Medical Record, June 11, 1892.

Meyer,[1] and Pacanowski.[2] Most of the recorded cases were associated with pernicious anæmia, or with the cancerous cachexia, or occurred in the senile. The relationship of atrophy of the gastric tubules with pernicious anæmia, or at least with a simple anæmia of high grade was most commonly remarked, although this condition was also not unusually found as the terminal stage of chronic gastritis, the symptoms of which had been evident prior to the development of those of atrophy of the tubules.

The literature of the subject, although rich and interesting, cannot be now especially noticed further; the foregoing remarks and references cited are merely an illustration of the attention it has already received. The present paper is a study of personally observed cases, the condition of which clinically corresponds minutely with that now recognized as underlying atrophy of the gastric tubules, characterized as they are by practically total secretory loss over a long period. These cases are especially of interest occurring without history of gastritis or of causes to originate the same. With their description I shall briefly discuss the causation of this affection, which apparently is not rare, although not commonly recognized, shall note its effects upon the general health and how these may be suitably influenced by treatment.

At the outset it is of prime importance to clearly comprehend what is understood by the gastric condition clinically regarded as analagous to atrophy of the tubules, so that for a moment I shall digress to consider this point. However originated, by this is meant a state in which, over a long and continuous period, there is practically no secretion of gastric juice—of HCl, of pepsin, or of the rennet ferment. Digestion, save of starches, by aid of saliva ingested with the food, does not occur in the stomach, unless, as was evidently the case in one of my patients, regurgitation of a digestive fluid takes place from the duodenum. With the trial meal withdrawn at a period at which the digestive act should be at its height and free HCl present, and at which appropriate tests should demonstrate absence of undigested albumin, the presence of traces only of syntonin, and the presence of proteoses in abundance, and should also show undoubted presence of pepsin and of the milk-curdling ferment in their active condition, none of these occur. The filtrate, if a filtrate may be obtained from the thick masses of undissolved food, is of a degree of acidity only equalling that of the food taken. Instead of the total acidity being from 40 to 65, representing, with acid salts, saturation of the organic bases and salts of the ingesta with HCl, and a fair amount of the last as uncombined acid, the acidity is in the proximity of 4 or 5.[3] Not only are traces of uncombined HCl absent, but the absence also of bound HCl is shown by the quantity of this acid required to be added to the filtrate or to the unfiltered portion before a reaction to free acid may be obtained.[1] The total absence of pepsin is shown by the fact that a filtrate, fortified by the addition of a proper amount of HCl, has no digestive action after many hours in the thermostat. The absence of the rennet ferment is similarly demonstrated by the inability of an appropriate amount of the filtrate added to a measured portion of milk, to solidify the latter.

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[1] Zeitschr. f. klin. Med., Bd. xvi.

[2] Wiener med. Presse, 1888, No. 22.

[3] I find the acidity of a baker's roll, such as constituted the Ewald test breakfast, well macerated with 300 c.cm. of water, averages 4 to 6, calculated, as in estimations with the gastric filtrate,

Starch digestion is normal should the albuminoids be in such a state of division as to admit of the penetration of the saliva. Gastric motility is usually affected, and often profoundly so. In consequence of which, symptoms referable to the stomach occur, and the various remote symptoms commonly so originated also assume prominence. Except in those cases developing as the final stage of gastritis or accompanying gastric carcinoma, gastric dilatation, save in minor degree, is usually absent until late in the affection, when motility has been long affected.

Doubtless, certain of the cases once regarded as those of total suppression of the secretory functions, indicative of atrophy of the mucosa, the diagnosis of which rested upon the examination of the stomach contents alone, were probably mere examples of pronounced, although curable, gastritis, in which, with absence of free HCl, further search for the presence of pepsin and the milk-curdling ferment, rennin, was not made, or, if undertaken, was improperly pursued. Javorski[2] has especially studied the separation of total secretory inactivity, which, when constantly observed over a long period, indicates atrophy of the tubules, and the more curable chronic inflammatory condition, and has given us a method of differentiation which, understandingly applied, has almost the certainty of mathematical demonstration. He pointed out in this particular a fact little regarded by many workers in the field of applied gastric chemistry, that the mere addition of HCl to a non-free HCl gastric secretion, even though the latter be of decided acidity,

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on 100 c.cm., and titrated with decinormal alkali. A more varied meal, such as that of Reichmann's—30 grammes of meal powder, 2 grammes of salt, 1 wheaten roll, and 200 c.cm. of water—yields a higher acidity, equalling, according to Reichmann (Deut. med. Woch., Feb. 14, 1889), about 0.1 per cent. As no intimate admixture of the roll and the water ingested occur in the stomach, and liquids are so rapidly passed into the bowel, a higher degree of acidity may often be expected from the roll breakfast in these cases, when withdrawn an hour or longer after ingestion, without the occurrence of fermentative changes to increase the same. Then usually, through the removal of the fluid simultaneously ingested, and lack of secretion to further assist in the solution of the food, the gastric contents are in such thick masses as to block the tube in process of removal. A filtrate in such cases can only be obtained by the aid of filter-pump pressure or by expression through muslin. The acidity here may be higher. I found the acidity of the filtrate from a roll macerated in 180 c.cm. of water to be 9. The slight alkalinity of the admixed saliva is likely to have a certain, although small, amount of neutralizing effect.

[1] I find by experiment that fully as much is required as in the filtrate from a similar meal, macerated for the same time, outside the stomach.

[2] Verhandlungen des Congresses f. Inn. Med., 1888.

is not sufficient to demonstrate the absence of pepsin, should no digestive activity under proper conditions of temperature and the like be shown by the same, unless the amount of HCl added be sufficient to at least satisfy the organic bases and albuminoids of the foods and leave a small excess apparent as free acid.[1]

A more important circumstance, which also has tended to render nugatory the experiments, as commonly obtained, with the gastric filtrate is the fact that pepsin and rennin, as the researches of Ebstein and Greutzner[2] show, exist in the gastric follicles as a proenzyme, only to be converted into the active ferments chiefly through the agency of the HCl of the gastric secretion. Pepsin formation can be but slight in cases in which secretion of HCl is much impaired, and in those cases in which little or no secretion of HCl occurs, that of pepsin and rennin is entirely in abeyance, although the latter may exist in the gastric tubules in some amount as the inactive proenzymes. Slight or no digestive activity is, therefore, often to be obtained, as I have frequently noted and elsewhere remarked,[3] with the gastric filtrate of a case of pronounced, although curable, gastritis, in which, without atrophy of the tubules, little or no bound HCl exists, even though HCl be afterward freely added in the manner mentioned. If, however, HCl be first administered in quantity more than enough to satisfy the salts and albuminoids of the ingesta, the transformation of the ever-present proenzyme into the active ferment is stimulated; and, furthermore, if the HCl be introduced into the *fasting* stomach the formation of pepsin is still more apparent. It was this principle that suggested to Javorski his admirable method of ascertaining the activity of pepsin and of lab formation, the secretion of the latter of which runs parallel to pepsin, and the formation of which is also stimulated by HCl.

The test is as follows: Into the fasting and cleaned stomach in the morning 200 c.cm. of decinormal HCl are introduced and after a halt hour withdrawn, the patient in the interim quietly sitting. The acidity of this filtrate is then ascertained by the decinormal sodium solution, and its digestive activity may be at once noted by placing a small disk of egg (about 1½ cgm.) into 10 c.cm. or more. This, inspected from time to time, is maintained at the body temperature in the incubator for twenty-four hours. Should the formation of pepsin by this means be expected its amount may be roughly estimated by definite dilutions in a row of flasks with $\frac{N}{20}$ HCl, so that each flask contains a diminishing quantity of the filtrate and an increasing amount of the diluent. The percentage of digestive activity is then noted in each tube at the end of twenty-four hours. By this means information is obtained not only as to the presence or absence of secretions of pepsin, but also as to relative quantity. Thus, as remarks Javorski, definite data may be reached as to the extent of the anatomical changes. This method applied to the study of the gastric condition of many of the cases formerly viewed as those of atrophy of the tubules, especially in those of advanced gastritis, demonstrated a very fair, although latent activity on the part of the secretory function; the stimulating influence of HCl was alone needed for the appearance of the digestive enzymes.

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[1] This same is not essential in the stomach, when, with totally absent free HCl (to the color reagents), digestion may readily proceed, provided, as cannot be the case in our laboratory experiments, saturation of the albuminoids by the loosely bound acid is maintained by continuous secretion. Notwithstanding HCl may at no stage of the digestive phase in the stomach be apparent as free acid to the color tests, proteolysis will not necessarily be imperfect without it, although it will be delayed, as the acid imbibed by the albuminoids is all that is required for peptinization.

[2] Quoted by Javorski: Pflüger's Arch., B. 8, p. 169.

[3] Therapeutic Gazette, November 1, 1893, p. 749–750.

Javorski,[1] whose experience with cases of suspected atrophy of the tubules was largely as an affection secondary to gastritis, whence he proposed the term atrophic gastric catarrh, believed, as a result of the fact just mentioned that many of the cases he, as well as others, had formerly viewed as those of total atrophy of the mucosa, were simply examples of gastritis as related, and that, in these, secretion might after a time have been re-established. Only isolated instances in which this test of Javorski's has been applied in arriving at a diagnosis are on record. Reichmann,[2] who has especially attended to this point, thinks that very few cases exist of actual *total* atrophy. Thus in 107 gastric cases, excluding cancer, noted in a certain time, 10, or 9⅓ per cent., were looked upon to all practical purposes as those of atrophy of the mucosa, although in eight of the ten larger or smaller traces of peptinization occurred in the stomach. He still views these cases as practically examples of this affection, although not of extreme grade.

In all the cases reported in which it seemed probable that more or less complete atrophy of the tubules existed, the secretory function was found to be very seriously affected. After the trial meal a very low acidity existed, about equalling that of the food eaten. There was total and persistent absence of HCl, of pepsin, and lab ferment. This condition was associated with impaired motility, and, in many advanced cases, gastrectasis of a certain degree existed in consequence. The causative factor in many of the cases, as remarked, was a past, severe chronic gastritis, symptoms of which had antedated the trouble. The majority of the reported cases were in middle or advanced life and only two were in the young. The symptoms, save in a few, were those of pronounced gastric disturbances, and, also, often of grave anæmia. In nearly all, gastric symptoms were at some time prominent, and in the majority continued to be a conspicuous feature of the superadded malady. Pain in the epigastrium or in the right hypochondrium or paroxysmal and periodical vomiting were very commonly noted. The physical character of the vomit, too, has been regarded as peculiar, in that the food is ejected in thick undissolved masses.

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[1] Loc. cit.

[2] Deutsch. Med. Woch., February 14, 1889.

In the cases I have had under continuous observation for several years the symptoms directly and remotely connected with the gastric condition have been of varied character.

In the case I first describe, symptoms referable to the stomach were surprisingly slight, and would have been passed over without an examination of the gastric contents to ascertain their true significance had I not been especially engaged in such work. In this case a chronic gouty arthritis had existed for some time, invaliding the patient, and symptoms of decided renal inadequacy, indicating fibrosis of the kidney, were evident. A study of the state of the stomach showed continuous total lack of secretion with profound affection of the motor function: as regards the latter, it being frequently the case that food from the evening meal was present in the fasting stomach in the morning. Treatment directed to the arthritis was without marked effect, until attention was especially paid to the stomach, and particularly to the impaired motility. Then, the arthritis, which had so far crippled the patient that she was confined to the house, was removed, and for more than a year she has been free from symptoms of joint trouble, has free use of the limbs, and the indications of nephritis have passed into the background. She has gained largely in flesh, is apparently in perfect physical condition, despite the absence of gastric secretion continuing as before.

The second case came under observation with symptoms of pronounced anæmia, plus others, akin to the condition described by Da Costa[1] as cardiac asthenia. Gastric symptoms were not pronounced, although more prominent than in Case I. Consent to an examination of the stomach contents could be obtained with difficulty, and the only reliable test for motility, that of Leube's, was impossible of application, because of the patient's unwillingness to become accustomed to the use of the tube. Improvement under remedies directed to the gastric condition was so marked and continuous to the present that little excuse could be urged for frequent examinations of the stomach contents: although such examinations were at first frequently made, and after marked and continuous improvement have been repeated every few weeks or months. This patient, also, for more than a year, has apparently been in perfect health, eating heartily, totally without symptoms of indigestion; presumably because gastric motility, at first impaired, has become normal.

The third case, the only neurotic of the three, is also the only one in which gastric symptoms were steadily in evidence and at all suggestive. In this case, in addition to symptoms referable to the stomach, those of the nervous system, such as hysterical attacks and epileptoid seizures, have been prominent, the bearing of the last of which when upon the gastric disorder, whether of *post* or *propter hoc* order, is not easy to determine. It is probable that all have a similar origin in an inherently oversusceptible, unstable, nervous system. This case, less interesting and less instructive than the preceding, is, however, not without some points of interest. Treatment directed to a neurosis has been in the main unsatisfactory, as might be expected: that to the gastric condition consisted chiefly in the use of large doses of diluted HCl. Special treatment by the tube and the employment of intragastric electricity were impossible, because of the repugnance of the patient to their employment.

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[1] THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, April, 1894.

The following are histories of these cases:

CASE I.—Mrs. J. K. M., aged fifty-two years. First came under observation May 30, 1892. The prominent ailment then was chronic arthritis, which incapacitated her for walking, and for which she was referred to me for treatment by Prof. Keen. The knees and several of the interphalangeal finger-joints had been swollen and painful for a year; no history of acute articular rheumatism. The knee-joints were especially swollen on the inner aspects; a distinct creaking occurred about the patellæ on flexing them, due, as Dr. Keen and I thought, to deposits of urates in these situations. Considerable pain was felt on movement, so that patient was practically chair-ridden. Several of the interphalangeal joints of both hands were nodulated. None showed any spindling tendency. Beside steady pains in the joints, and that provoked by exercise, attacks of severer pain were common in the elbows, knees, hip-, and finger-joints, and in the cervical spine. These always corresponded in onset with a sharp diminution in excretion of uric acid, as was shown by a long series of observations on the urine.[1] The pains were always more marked preceding and during damp weather or a rain-storm. The patient still menstruated regularly. Skin and mucous membranes were somewhat pale; no decided evidences of anæmia; no icterus; no wasting. Weight, 145 to 150 pounds. The heart was habitually somewhat overacting, but without indications of enlargement. Second sound accentuated at the apex; pulse-tension always raised; the sphygmogram always showing the elevated, full tidal-wave of increased pressure, with the chief descending wave higher than normal. Arterial thickening absent. The amount of urine passed, measured daily over a long period, averaged 1000 c. cm. The mixed twenty-four-hour specimens, which were alone examined, were pale, of low gravity, low urea, low chlorides, and contained occasionally hyaline casts. Albumin was frequently present (to heat or HNO_3) in small amount. The amount of urine was easily influenced by diuretics: piperazin, potassium citrate, or drinking freely of water, causing a great increase. The indications beside the gouty arthritis were of incipient granular kidney.

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[1] Her normal uric acid output, as ascertained by a long series of examinations, was 0 5 gramme. Coincident with sharp attacks of joint pain the amount invariably fell to or below 0.1 gramme, indicating, as I have elsewhere (Therapeutic Gazette, February, 1894) remarked concerning this feature of the case, impaired solution of the quadriurates in the blood, with a tendency to their deposit, as sodium biurate, about the cartilages and synovial tissues of the joints.

Symptoms of indigestion were uncomplained of. Appetite was poor. Bowels were somewhat constipated. She was first under my care for but two or three weeks, going in the summer to Richfield Springs for the baths and massage. No improvement had resulted when seen in the late autumn of 1892. Treatment was re-begun about January 1st following. It was then remarked that the stools had been of pipe-clay color for some time, although other indications of bile retention were lacking.[1] Special symptoms of indigestion were still absent, save that during the menstrual period feeling of decided weight in the epigastrium after food was common.

Examination of the stomach contents first made January 24, 1893, and repeated at intervals of from two to three days for three weeks, showed on all occasions total secretory inactivity. The gastric contents were withdrawn from one to one and one-half hours after the Ewald trial breakfast. The stomach was always cleansed by lavage preceding these and all succeeding examinations to the present, which were made at weekly intervals for the first year and subsequently at lapses of one to three months. The removed contents were often neutral in reaction, but usually had an acidity measured by $\frac{N}{10}$ NaHO, and calculated on 100 c. cm. of filtrate of from two to five. An acidity of ten was rare. It is of interest to note that on one occasion an acidity of eighteen was obtained, evidently due to the presence of fermentation lactic acid at a time when propulsion was especially effected and food habitually lay over night in the stomach.[2]

Care was taken, as is always my practice, to thoroughly break up with a glass rod the removed contents, and subsequently by agitation to mix them, that a filtrate representative of the mass be obtained. Often, because of the coherence and solidity of the removed contents, a filtrate is impossible in these cases without the use of the filter-pump. Sometimes this fails, and expression through cheese-cloth is necessary to obtain a material for examination. Not infrequently during the first few weeks of examination before active treatment of the gastric condition was initiated, and before full doses of HCl were begun, the contents presented a homogeneous, gruel-like appearance of a decided yellow hue, although, curiously, the stools then were of a light-gray color.[3] The color and solution of the foods were apparently due to regurgitation of bile, and very likely of pancreatic secretion from the duodenum, through a relaxed pylorus, thus admitting of partial pancreatic digestion within the stomach, in the absence to inhibit it, of HCl secretion. On these occasions especially, although, as might be supposed, no syntonin was present, there was no large amount of undigested albumin in the filtrate, and AM_2SO_4, with boiling, after the removal of the unchanged albumin, gave often a decided cloud, due to the presence of proteoses. After removal of undigested albumin, NaCl to saturation, in the cold, often, also, gave a precipitate, not, however, increased by the addition of acetic acid. On these occasions no further digestive activity could be obtained from the untreated filtrate in the thermostat. Even a trace of the milk-curdling ferment had been usually absent. Occasionally its presence in minute amount is shown by semi-solidification of milk in the warm chamber after many hours' contact, a soft curd appearing then at the end of about ten hours, instead of the firm, instantaneous solidification normally to be obtained. Traces of the prolab-ferment are more common, the further addition of $CaCl_2$ solution usually tending to cause a soft curd at an average time of one hour.[1]

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[1] This curious absence of bile pigment in the stools persisted for several months. It finally disappeared under the use of the stomach douche.

[2] On this occasion, although the stomach was cleansed by lavage before the roll breakfast, as was always done, a sour, musty odor was apparent in the removed contents, and a decided Uffelmann reaction was obtained from the filtrate. Uffelmann's test, usually applied, never save on one other occasion before or since gave this reaction. Here was an isolated instance through a cause not easy to understand, that a condition existed ripe for development of lactic acid producing bacilli.

[3] The administration of 300 c.cm. of an $\frac{N}{10}$HCl solution alone, and sometimes with pepsin coincident with the trial meal was tried on several occasions, and siphonage practised at varying intervals after the meal, for the purpose of studying the effects of ingested HCl upon the digestive process. It was noticed that with the use of HCl, instead of the yellow-hued, well-solved contents obtained but the day before, the food presented a water-soaked appearance of a green color, with abundance of pieces of roll yet evident.

Examinations by Javorski's method for pepsin and lab and their proferments have been steadily made to the present at intervals of two to four months. The filtrate of the $\frac{N}{10}$HCl solution, the latter of which had been allowed to remain in the stomach from a half to three-quarters of an hour, had an acidity of usually 0.07 per cent. This was always reinforced with strong NCl, to 0.1, 0.15, 0.2, and 0.3 per cent. in several tubes. No further digestive activity is ever shown at the end of twenty-four hours in the incubator, save that the edges of the disk of white of egg become slightly transparent, a condition which normally should be observed after a few moments' contact. This even is not invariable, and several changes of filtrate similarly reinforced by acid produce no further evidences of digestion. There are always indications of traces of the milk-curdling ferment, and of its proenzyme by Javorski's method.

At first, although a continuous, careful study of the gastric conditions was made, treatment was not directed to the stomach, apart from the almost daily use of the warm douche. During this time the influence of certain drugs on the uratic condition was being studied.[2] At this time food was almost invariably found in the fasting stomach in the morning, after supper early in the evening before. This is the more interesting, as no gastrectasia has ever existed. The propulsive function was, therefore, profoundly affected, and it now seems certain that improvement in gastric motility under treatment directed especially to it, such as the stomach douche, the use of HCl, but especially intragastric electricity, rather than the use of drugs for the gouty condition, was the cause of the recovery from the last. Piperazin alone and the use of sodium salicylates were without very noticeable effect upon the joint swelling or pain. Subsequently piperazin employed with an alkali apparently was more efficient. Later, all swelling disappeared, and pain finally ceased under the continued use of intragastric electricity. As absolutely no drug to influence the rheumatic condition has been administered for a year and a half, and all symptoms referable thereto have continued absent, it is apparent that continued attention to the much-impaired motility has been the chief cause of the cure of the former.

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[1] Traces of the prolab-ferment C, labzymogen, were noted in all the cases, as is common in this condition, even with the existence of supposed widespread atrophy.

[2] See Therapeutic Gazette, February, 1894. "The Influence of Piperazin on the Urine and Especially on Uric Acid and Urea Excretion."

After she had been under observation nearly a year, and during which time menstruation was regular, indications of the approach of the menopause were evident. This seemingly has but little effect upon her general condition. Vasomotor disturbances, such as flushing and headache, related to the climacteric, were complained of for only a short time. The menopause is now passed. The menses became at first very irregular in appearance, and now have ceased (for over a year) to appear. Her physical condition is very good. No symptoms of indigestion occur, although she eats heartily of ordinary table food without any care in its selection. Gastric propulsion is noted from time to time by aid of the tube. It remains perfect despite discontinuance of treatment, more than a year ago. Blood-pressure is no longer abnormally raised. The urinary output still tends to be a trifle excessive, averaging lately 1600 c.cm. in several days' consecutive examination. Urea excretion is higher (29 grammes), while chlorine is normal in amount (7 to 8 grammes). Albumin is inconstantly present in traces (to the heat test). Casts were not found in several recent examinations.

Case II.—Mrs. M. B., aged thirty-five years. First came under observation in November, 1892. Had always been in good health until four years previously. In the winter and spring of 1888 she became weak, lost appetite, developed breathlessness on exertion, cardiac palpitation, pallor, and was finally forced to keep abed, because of extreme debility. Attacks of syncope often occurred on attempting to assume the erect posture. Her health improved somewhat, without special treatment in the summer of 1888, the symptoms, however, returning again in the autumn. She is said to have again been much prostrated, of great pallor, to have had breathlessness on exertion and attacks of syncope. These last were often alarming in character, and more than once death was anticipated by her attendants. The feet and ankles were a trifle swollen at these times, and numbness and tingling were noted in the extremities. These attacks of extreme physical prostration, as if from a suddenly induced profound anæmia, each of several months' duration, had recurred each year without assignable cause. She remained weak and debilitated in the intervals, although able to be about and attend, after a fashion, to household duties. When first seen she was practically confined to the bed. She presented the appearance of decided anæmia; greater than was found to exist by a blood examination. Extremities were always cold; cardiac palpitation existed, with freely acting heart and relatively accentuated second sound at the apex. There was no detectable cardiac enlargement, and no bruits. Pulse tension low. Pretibial œdema. Face occasionally noted to swell. Examination of lungs, liver, and spleen negative. Stomach outline normal. Knee-jerk, station, tactile sensibility: normal. Blood examination, repeated on several occasions before treatment was begun: Corpuscles normal in outline; no leucocytosis; 2,300,000 red cells; hæmoglobin, 40 per cent. No apparent cause for the condition evident. The menstrual function has been regular until some time after the appearance of the first seizure. Coincident with one of the attacks of anæmia it ceased, and had been irregular since, the periods occurring at long intervals and lasting a week or more, in which much blood was lost. This menorrhagia was not common and at no time preceded the advent of the anæmic seizures, so no causal relation could here be traced.[1] There were no indications of latent gastric or intestinal ulceration, nor of hemorrhoids. A prolonged survey of the stools showed no loss of blood by the bowel. Malaria was excluded by repeated blood-examinations for plasmodia, and by absence of fever and of exposure. A careful study of the urine was also negative, as regards causation. Albumin, save in traces to the more refined tests (and then probably of extra-renal origin), was absent, as were casts. Urea excretion was quite low even for body-weight (120 pounds); chlorine output was also somewhat diminished.[2] As anorexia was then marked and but little solid food was taken, the low urinary solids, and especially urea, may be thus explained. I have found it quite invariable in all cases with much deficiency in active gastric juice that the urea output is low for body-weight and nitrogenous intake. Chlorine excretion in such cases is, however, usually normal or somewhat excessive for obvious reasons, unless there be coincident renal insufficiency. Gastric symptoms in this case were in the background. Nothing was remarked as to their presence or past occurrence until inquiry especially directed to the stomach, after search for another source for the condition was resultless, elicited a history of digestive disturbance. It appears she had been in the past subject for years to occasional spells of vomiting, lasting sometimes for weeks. None had, however, occurred for some years until the first anæmic seizure appeared. During this, and most of those following, she often felt weight in the epigastrium after food, had nausea, eructations, and occasionally vomited. These symptoms were not evident during the period in which I first treated her, so that an examination of the gastric contents was not made. Under a concentrated, easily digested diet, and the employment of iron in full doses, she greatly improved. At the expiration of three and one-half months the anæmia had disappeared. A few weeks subsequently, treatment had been discontinued, a seizure similar to the others occurred, with analogous symptoms and blood state. I now insisted on an examination of the stomach contents, consent to which could not at first be obtained. The condition found was practically similar to that in the other cases, save that, unlike as in Case I., no biliary discoloration was even present, and the contents removed were always in thick masses, which tended to block the tube. As in the other cases, the acidity was always low—from two to five. No response to free HCl by the color reagents was manifest until a number of cubic centimetres of $\frac{N}{10}$ HCl were added to 10 c.cm. of the filtrate. The filtrate reinforced by a suitable amount of HCl had no digestive action after many hours in the incubator. Lab ferment was absent, and its proenzyme present only in minute traces. Examinations made at short intervals during the first year, and at periods of two to four months subsequently, the last at the date of this writing, give always similar results. Javorski's method, also used on a number of occasions, gives result as in Case I. Treatment instituted consisted in the use of very large doses of HCl before meals, and either betol or B. naphthol after. The acid was continued for nearly a year and the naphthol for several months, despite a prompt recovery from the asthenic condition. No return of the trouble has occurred, although two years have elapsed since the last attack. Her weight is now 165 pounds; her nutrition is apparently perfect. No symptoms of indigestion ever occur. She states she can eat any food, however indigestible, without more than slight, if any, discomfort. The gastric secretory condition remains exactly as before with examinations made after the trial meal. Javorski's method, however, now shows very slight pepsin formation, not at first manifested, under the stimulating influence of the HCl. Prolonged contact (fifteen to twenty hours) in the incubator brings about solution of the periphery of the disk of white of egg, indicating that there remains yet a slight, though dormant, activity on the part of a few of the pepsin secreting cells, as is common in all of these cases.

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[1] The climacteric was passed soon after she came under my care. No menstruation has now occurred for two years. The indications are, from this fact and great gain in flesh, that that function has now finally ceased.

[2] The average figures over a period of four days during one of the anæmic spells were: Amount, 1505 c.cm.; sp. gr., 1010¾; urea, 13.71 grammes; chlorine, 5½ grammes; uric acid, 0.6 gramme. Color deficient in pigment.

Eight months later, and after recovery and considerable gain in flesh (thirty pounds), the average figures for four consecutive days were: 1620 c.cm.; sp. gr., 1012; urea, 17.60 grammes chlorine, 7.70 grammes; uric acid, 0.6 gramme.

CASE III.—Mrs. S. R. E., aged thirty-two years, first came under observation in the spring of 1891. It was then noted that she was of robust build, large frame, weight 135 pounds. Skin very sallow and of a leaden hue; never pregnant. Gastric symptoms had been present for five years—two years prior to marriage. These were, essentially, anorexia: always feels more comfortable when fasting; distress after all food, however light; often sensation of burning in the epigastrium, with nausea and, not infrequently, vomiting; nausea for years invariable on rising, always with retching. Eats but little meat, fancying that intensifies distress. Often craves indigestible food, relishing it, and has sometimes no discomfort after. Bowels irregular. Tongue usually furred; mouth dry; teeth perfect. Menstruated early; always dysmenorrhœa; no uterine disease. Epileptoid seizures appeared about the date gastric symptoms first noticed; these occurred several times a month for several years, subsequently about once monthly—never at menstrual period. The onset of the seizures is announced by a remote warning (one to two days), consisting of pain in the nucha and occiput, and about the left scapula. An immediate warning is also usual: a sensation as if she were being painlessly dismembered. This is succeeded by sudden and complete loss of consciousness, and a fall if in the erect posture. The seizures often occur when by herself; has been injured about the head and body in falling. No coarse clonic spasms occur. There is often a generalized tonicity, and occasionally twitching of the face and extremities. Tongue is never bitten. Unconsciousness lasts from a few moments to half-hour. Headache follows, but no stupor. Patient is a profound neurotic. There is a questionable history of true ague several years before while living in a malarial region. She often has had an afternoon temperature of 102° to 102½°. Repeated blood examination during the pyrexia shows no plasmodia. Chills or sweating do not occur. A number of blood examinations during the first few months of observation showed the conditions of chlorosis. Red cells, 4,000,000 to 4,500,000 (the latter more usual); hæmoglobin, 40 to 50 per cent.

The employment of the stomach tube, the use of which is always strenuously objected to, often causes a hysteroidal seizure, in which there is generalized twitching of the muscles and considerable prostration. As she would not accustom herself to the tube, it could not be often used for purposes of diagnosis or for treatment. Examinations were, however, made by it at intervals of a month during the first year, and then to the present four times a year. Either the full meal of Leube and Riegel, or more often the roll breakfast was given. The results were always invariably as in the other cases. A very low acidity, equalling only that of the food taken, was obtained save on one or two occasions when evidences of fermentation were present. The gastric contents were coherent, thick, and blocked the tube, and, physically, usually showed no evidences of change. Undigested albumin always abounded, but no syntonin or proteoses. Lab ferment always absent; its proenzyme present in minute traces. No traces of pepsin. Javorski's method, used in a modified form[1] in this case, however, showed, as in the others, that traces could be obtained under the stimulating influence of HCl.

Following the establishment of the diagnosis of absence of the secretory function, accomplished now so readily by modern methods of research, the question that naturally first engages the attention is as to the underlying anatomico-pathological state: whether there be a mere temporary suppression of secretion from neurotic disturbance, or whether the condition be dependent upon atrophy of the tubules. Succeeding this, the problem as to origin of these cases appears one less easy of solution, with absence of history of other disease *in loco*, such as gastritis, from which immediate cause and effect may be traced. Of still more practical importance than either of the foregoing, yet intimately blended with them, is the question of therapy. Each of these I shall now consider somewhat in detail.

The recognition of total secretory loss is, as remarked, a matter of comparative ease by the adoption of the methods outlined, provided one is sufficiently on the alert and gastric symptoms are evident. In none of my cases did the symptoms regarded by Reichmann[2] as typical occur —vomiting of food in thick masses and recurring pain in the epigastrium and right hypochondrium, the last indicative of pyloric irritation. In but one were gastric symptoms prominent. In Case I., by far the most interesting from both a diagnostic and prognostic standpoint, these were slight and might readily have escaped notice. The most interesting feature concerning this case, as remarked, was the presence of gouty arthritis, with symptoms of incipient chronic nephritis, the former entirely cured, the latter at least yet held in abeyance by attention to the gastric propulsive function, obviating stagnation and fermentation of the ingesta. The occurrence of disorders in the joints in diseases of the stomach is not a new observation. Bouchard some years ago noted nodular swelling of the fingers in cases of dilatation of the stomach, and others have described chronic articular enlargement and pain in association with absence of free HCl in the gastric juice, removed by attention to the stomach. It is significant that in two other cases encountered by myself (hospital out-patients) very markedly crippled joints existed without decided gastric symptoms, yet with the same condition of the stomach. In one, a male, aged fifty years, several examinations of the stomach contents, after the usual trial meal, gave a total acidity of but 2 to 3 in 100 c.cm., with other conditions, also, practically similar to those described in the cases here reported. In this case there was a typical blending of rheumatoid and rheumatic arthritis; the joints of the fingers, toes, wrists, shoulders, ankles, and knees were affected, with many of the smaller joints typically spindled. He was a trifle cachectic. The urine was somewhat diminished in amount, although without decided diminution in urinary solids or urea. Uric-acid excretion was normal (in a number of days' continuous observations); the chlorides were increased; albumin was absent. The joint affection had existed for thirty years. The case passed from view before it could be further studied or observations made as to the effects of treatment on the absent secretory function. In the other case, the notes of which have been mislaid, there was a chronic articular rheumatism without a history of an acute seizure. These cases indicate that the occurrence of joint symptoms associated with those of secretory failure are not uncommon.[1] Whether there was in these two cases the same obvious causal relation existing in Case I. of my series can only be conjectured. The association is certainly of interest.

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[1] A large amount of HCl is administered with a small trial meal, and siphonage and tests made *secundum artem*. The filtrate usually had an acidity of from 18 to 20. Free HCl, approximately, 0.01 per cent. No lab ferment; traces of the proenzyme. At the expiration of twenty-four hours in the incubator slight digestive activity shown.

[2] Deut. med. Woch., February 14, 1889.

It is of importance to distinguish between the cases of absent secretory function and those of chronic gastritis—easily done by the employment of Javorski's method for the recognition of the presence of pepsin and the lab ferment. These are, as before remarked, found in fair quantity in chronic gastritis, unless the changes have advanced to marked atrophy of the mucosa. The frequent occurrence of mucus in the removed contents and in the wash-water, and the presence of shreds of mucous membrane, or, microscopically, of numerous epithelial cells, and, in cancer, of pieces of the growth or of true cancer cell-nests, assist in diagnosis. It is of importance, also, that in chronic gastritis and in cancer the acidity of the filtrate after a trial meal is usually considerably higher than in conditions of decided atrophy, or at least of absent secretory activity, whether the last be due to atrophy of the tubules or to mere neurosal suppression of secretion.

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[1] Since this was written I have encountered still another case—one of typical rheumatoid arthritis—in which there also exists total secretory loss. This case, occurring in my service at the Episcopal Hospital, is now under observation. With a total acidity of from 1 to 2, at a time which should represent the height of digestion of the Ewald meal, and absence of all digestive secretion, the gastric motor power is so well preserved that no symptoms of indigestion are now evident. A similar condition is evident after more varied meals.

The differentiation of these cases from latent carcinoma (especially the infiltrating variety) is a most important one. Here, too, unless an accompanying neurotic suppression of secretion mislead, rarely likely, Javorski's method is of the greatest utility. For although the absence of free HCl is usual in carcinoma of the stomach, it rarely occurs that a fair amount of pepsin and rennin may not be obtained from the widely diffused pepsin secreting-cells under the stimulating influence of HCl introduced into the fasting stomach. It seems established that in carcinoma very decided atrophy of the tubules is lacking save in the terminal stage, when the presence of obvious symptoms, if not tumor and dilatation, at least of cachexia and marked wasting, permit of diagnosis. A sign not to be overlooked, if coincident diminution in motility occur from the infiltrating carcinoma, as is common, is the early and persistent presence of marked lactic-acid production, apparently never more than an occasional and fleeting accompaniment of the cases of primary secretory failure.[1] A study of the bacteriology of the carcinomatous stomach, to which attention is now being especially directed, may also be of great utility in diagnosis. Oppler[2] has recently remarked a saprophytic, probably lactic-acid-producing baccillus in cases of gastric carcinoma with absence of free HCl. Others, including, in this country, Turck, and also myself, are studying this question, and it is hoped that great assistance may be ultimately rendered in this direction toward the early diagnosis of latent carcinoma of the stomach. Of great importance in the diagnosis of primary suppression of secretion is the absence of fermentative changes in the removed contents for a considerable time after withdrawal, uncommon in carcinoma or in gastritis. In the very large number of examinations made in all seasons in my cases, with the filtrate remaining on the laboratory table often for several days, it rarely occurred that odor of decomposition developed. This seemed so surprising with absence of HCl secretion that the point was carefully noted. It was remarked only on three occasions in the first case, and twice in that of the third. The trial meal was then withdrawn in from an hour to an hour and a half after its ingestion. Had it lain for a longer time, as over night, the case might readily have been different. Doubtless, rarely, gastric carcinoma is preceded by symptoms of nervous anacidity. In cases such as these the diagnosis must remain in doubt until the development of obvious symptoms of carcinoma. Ewald[3] remarks that even for years in women the case may occasionally superficially resemble a neurosis. It is, he states, striking, how a case such as this may grow suddenly worse coincident with the appearance of an intercurrent febrile disease, or a powerful mental shock. He watched two cases for years, both of which he had regarded as nervous in character, which ran on and in which no complaint, to be intelligently interpreted, of grave abdominal disorder was uttered. In one, in two weeks after an attack of influenza; in another, shortly prior to a great sorrow, decided objective symptoms of carcinoma of the stomach and uterus were apparent.

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[1] Noticed but twice in many examinations in Case I., and never encountered in the others.

[2] Deutsche medicinische Wochenschrift, January 31, 1895.

[3] Berliner klinische Wochenschrift, June 27, 1892.

The influence of treatment, especially on the accompanying atony, the prime cause of the symptoms of the absent secretory function, and the long duration of the case, will permit, if the diagnosis can be made in no other way, of a certain opinion. A duration of two or three years, without cachexia and wasting or appearance of other significant symptoms of cancer, however, these may occur later, would certainly indicate that the carcinoma was rather a sequel to atrophy of the tubules than a causative factor in the same.

The question of anatomico-pathological state underlying these cases of absent secretory function is less easy of determination than their recognition as a primary affection. Whether there be mere neurosal suppression of secretion with tubules still largely intact, or whether the condition be dependent upon an almost total atrophy of the same can rarely be readily answered from clinical evidence affirmatively with absolute positiveness. It is, perhaps, only when a series of these cases has been followed to the post-mortem table that great certainty of opinion may be ventured from mere clinical observation as to others with similar symptoms. This much, however, may be said, that the true condition underlying certain of these cases may after a time be assumed with a very fair degree of certainty. We know from abundant evidence that atrophy of the gastric tubules does occur, and has been found accountable not infrequently for profound anæmias. But symptoms suggestive of the same may appear as a neurosis is also established. Litten[1] has seen cases in which HCl and the ferments were absent for weeks, but finally returned. He, however, regards atrophy as practically proved if this absence continues persistently for months. I am unaware of there being any case on record in which suppression of digestive secretion has been totally constantly absent, as in these of mine, over a period of several years with final re-establishment of the same. Whatever the underlying original condition may have been, whether merely one of reflex inhibition, to consider it now in Cases I. and II., at least, other than actual atrophy of the secreting structure, seems irrational. Here, in Cases I. and II., totally free from neurotic taint, in face of complete restoration to health, the secreting function remains absent as before. The steady continuous absence of traces of HCl and under the most favorable conditions for the appearance of the same, the presence of only the merest traces of pepsin and rennin, in their zymogen or formative stages, after several years of treatment, especially directed to provoke a return to activity of the secretory structure by a therapy so uniformly successful in cases of similar suppression in simple gastritis, is more than suggestive of absence of gland structure. I dwell especially upon this since both Ewald[1] and Einhorn,[2] who have reported similar cases, are loath to describe them as examples of atrophy of the secretory structure.

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[1] Berliner klinische Wochenschrift, December 17, 1888.

Ewald[3] who has proposed for this affection the designation *anadenia ventriculi*, in describing a case clinically corresponding exactly with what is regarded as the same, is curiously reluctant to accept this pathological diagnosis, although he almost regards it as forced upon him, occurring as the case does in one free from evidences of a neurosis, from general disease of the nervous system, and from spinal irritation, and with absence of remissions and exacerbations in the symptoms of atrophy.

His case is of great clinical interest, resembling in certain particulars two of my own, and like them entirely regaining the general health under treatment, without a sign of restoration of gastric secretion. It is that of a male, aged twenty-nine years; under observation at the date of the report two and one-half years. He at first presented symptoms of pronounced dyspepsia, fulness and pressure after meals, flatulency, weariness and heaviness in the extremities, anorexia, and emaciation. He was finally forced to abandon his occupation—that of a chemist. Evidences of a neurosis were absent. Many and continuous examinations of the stomach contents, after trial meals and by Javorski's method, always gave similar result, despite the return of perfect gastric motility, re-establishment of the health, and a gain in weight of forty-two pounds. Einhorn, who has described four carefully studied cases, similar as regards the prolonged absence of gastric juice, proposes as a better term than *anadenia ventriculi* that of *achylia gastrica*, expressing, whatever the pathological state, the actual consequence of the condition. This is much as the term albuminuria has been employed in the past to cover both functional and organic renal disturbances. Einhorn's cases (three of which were males and one a female) were under observation, respectively: one about four years; another a trifle less than two years; the others a few months. Gastric symptoms in all had been of long duration: in one, a ruminant, they had existed only in early youth. In another, vomiting and gastric pain had been present for twenty years; in another of the four for ten years. In none is it noted that there are evidences of a neurosis.[4]

In two of my cases, the non-neurotics, the menopause occurred while they were under observation. In both, symptoms for some time antedated the early appearance of cessation of the catamenia. In case second the symptoms indicated that the menopause was precipitated by the recurring spells of profound prostration and anæmia. In both of these cases no symptoms incident to change of life have occurred for a long time. In each the menses have now been absent for over a year. The third case (the neurotic), in which epileptoid seizures occur, still menstruates regularly. This patient, under observation for four years, I had for a long time regarded as one of purely neurosal suppression of secretion. At present I can only say that I am still somewhat in doubt as to the pathological underlying condition, but am inclined to regard it also as atrophy of the secretory structure succeeding continued neurosal suppression of secretion. In this case intragastric electricity, employed in Case I. of the series, so successfully as regards influence on motility, could not be resorted to, because of extreme and unreasonable repugnance on the part of the patient to such manipulative procedures. A study of the motor-function by the tube was impracticable for this reason. What most strongly negatives a mere functional derangement in the other of my cases, and is also in this case of value in differentiation, as it should be in that of Ewald's, and, apparently, also in certain of those of Einhorn's, is the complete re-establishment of the impaired motor-function of the stomach, permitting digestion to proceed in the bowel by aid of pancreatic secretion, and leading finally to disappearance of all symptoms, and practical—at least temporary—restoration to health, in spite of continued unintermittent absence of any gastric secretion. This will probably prove a point of very great value in the separation of cases of neurotic (temporary) suppression of secretion from those due to atrophy of the tubules. It is, however, one nowhere mentioned by writers on this subject. Impairment of the gastric motility, leading to atony, seems undoubtedly the prime cause of the direct symptoms in cases of this sort, for treatment directed to derangement of this function almost invariably leads to their disappearance: Whatever the determining cause of the secretory loss, disturbance of the motor-function, if not similarly originated, is soon apt to suffer indirectly through absence of the stimulating influence of constantly secreted HCl on the musculature, and of the normal abundant digestive fluid to promote solution, digestion, and ready transferrence of the food-mass into the bowel. Both motility and the secretory function alike suffering equally and simultaneously, as seems usual in these cases, suggests a common origin in derangement of the nervous mechanism of the stomach, and were motility permanently impaired with secretion, it would lend favor to Meyer's[1] suggestion as to the origin of the idiopathic form in disease of Auerbach's and Meissner's plexus, or the vagus or sympathetic alone. But were cases such as I describe, and the case of Ewald's above mentioned, due to mere functional nerve disturbance, then complete (for over a year in two of my cases) restoration of the markedly impaired motility, so that, despite what is eaten, symptoms of indigestion never occur and the general health remains perfect, secretory return should also have followed. For because of the functions of secretion and motility being intimately connected in innervation through the pneumogastric and sympathetic, it seems unreasonable to suppose that complete restoration of faulty nerve functioning in the one would not naturally lead, and after so long a time, to at least partial return to the normal in the other, especially in view of the long employment of a therapy so successful as a secretory stimulant in cases of functional derangement and in gastritis.

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[1] Berliner klinische Wochenschrift, 1892, No. 26.

[2] Medical Record, June 11, 1892.

[3] Berl. klin. Woch., 1892, No. 26.

[4] Excepting in one the presence of rumination.

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[1] Zeitschrift für klinische Medicin., Bd. xvi.

These cases may have been *ab initio*, through causes not now apparent, those of mere functional neurotic suppression of secretion, through long-continued reflected disturbance in gastric innervation impairing jointly both motility and secretion, leading to atony with symptoms referable thereto. A suggestion of Stockton's[1] is worthy of note in this particular. In referring to the origin of just such cases, he asks if we may not have to do with an affection which at the start is functional merely, but in which long-continued inhibition of glands is succeeded by atrophy, so that "what is first an amenable condition terminates in structural change and is permanent." Before I had read this plausible suggestion of Stockton's, and, indeed, long before it was thus uttered, my own thoughts had run in a similar channel through study of these cases. It would seem probable that the cases I report, as with that of Ewald's referred to, and perhaps also those of Einhorn's, were, through causes unknown, dependent primarily upon functional disturbance in innervation, leading to gradual suppression of secretion and to atony of the musculature. Finally, long-continued inhibition has led to atrophy of the secreting glands. As to a cause for the original source of irritation, the merest conjecture is alone possible. The attractive view of Stockton's as to reflected eye-strain, so plausible both because of what diverse symptoms refractive error may originate, and because in certain cases studied by Dr. Jones and himself, such error in high degree existed,[2] cannot be said to be more than suggestive. In the only neurotic of my cases, as narrated a highly emotional woman, who has had for several years epileptoid seizures, and on whom the use of the tube often induces hysterical seizures, reflexed irritation from eye-strain might be readily operative, but unfortunately for the general application of Stockton's suggestion, refractive error is practically absent.[1]

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[1] Medical News, December 15, 1894.

[2] Dr. Stockton states: "Without a single exception in the cases thus investigated [the number of which is not cited], there has been found to exist a definite, and, relatively speaking, uniform ocular defect, viz., unsymmetrical astigmatism of high degree, varying from one to five diopters." There also was noted in all irregular ametropia; myopia in one eye; hyperopia in the other, with a lack of correspondence in the axes of astigmatism.

In the first of my cases, a highly intelligent woman of great force of character, in whom disturbance through ocular defect was not especially anticipated, some degree of strain exists. She had been refracted long before she came under observation, and was wearing glasses which she had regarded as suitable, but which Dr. Gould, who examined her at my request, found were very incorrect. The refractive condition noted is:

R. + sph 0.50 + cyl. 1.75 D. ax. 30°.
L. — cyl. 0.25 D. ax. 75°.

The extra-ocular muscles balanced and visual acuity in each eye was perfect. Dr. Gould remarked in his report that "the splendid physical and mental organization has endured this irritating defect in a wonderful way."

The third case, a woman of less intelligence, who rarely employs her eyes for reading or more than coarse sewing, could be induced with difficulty to be refracted. Symptoms of eye-strain had never been apparent. An examination made by Dr. Gould showed a slight refractive error,[2] regarded even by Dr. Gould as too inconsiderable to cause any serious reflexes. The curiously similar ocular condition in Dr. Stockton's cases so interested me that I recently communicated with Dr. Einhorn concerning his four cases of presumable atrophy of the tubules, that in the preparation of this paper data bearing on this point be presented from as wide a range as possible. Dr. Einhorn reports that one case, a physician, examined by Dr. Knapp, showed no ocular defect of any sort; another, examined by Dr. D'Oench, was found to have a very slight degree of astigmatism, which, according to Dr. D'Oench, amounted to but little. A third patient is cross-eyed. The eyes of the fourth have not yet been examined. From this it will be seen that eye-strain must not be regarded as the source of irritation in all cases, if it can, as is doubtless true, be considered a factor of reflected trouble in others. In this particular, it is interesting to state for those favoring the causative influence of eye-strain in gastric disorder of supposed reflected origin, that Knies, in his recent work on the *Relations of the Eye to General Diseases*, remarks that "While there are manifold relations between diseases of the skin and the eye, this is true only to a slight extent of diseases of the digestive organs apart from a few very general occurrences." So that, on the whole, any view attributing gastric disorder to reflected eye-strain seems to receive no great support. Concerning weakness in the ocular muscles, which was noted in one of my cases (Case III.) by Dr. Gould, the following may be quoted from Knies, to indicate this is rather the effect than the cause of the gastric condition: "Abnormal digestive processes are very frequent causes of general anæmia and hydræmia with their sequelæ—feeble accommodation, weakness of the external ocular muscles (insufficiency)." That there is little doubt of this is illustrated by a case in point. In discussing this question recently with a distinguished practitioner, he informed me that but a few days before he suddenly noted a defect in vision not previously existing. An eye examination disclosed a weakness in the recti of evident acute onset, the source of which was found to be an attack of indigestion from a dietetic error the day previously. Resort to a purgative and care in diet led to the complete removal of the defect in a very short time.

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[1] When this patient first came under observation and sources of reflected disturbance were searched for, an eye examination was made by Dr. Schneideman, who reported total absence of astigmatic error and a slight hyperopia (less than one D.) in both eyes.

[2] A less degree of compound hyperoptic astigmatism in the right eye, with some simple hyperopia in the left.

As regards other sources than the eye from which reflected irritation might arise, suffice it to say here, the matter has received careful attention, but none has been found which could be regarded as adequate. It must, however, be remarked, concerning case third, that the neurotic taint here evident might, of course, render many slight and forgotten elements in her life, which would have been without influence upon the balance of an evenly poised temperament, productive of great influence for evil. The cause of many of these cases is, therefore, all but conjecture, as we are still without definite knowledge of the origin of the idiopathic form of supposed atrophy of the gastric tubules.

The question of therapy in these cases may at first view be thought barren, but in reality it is one from which in certain directions much may be expected, and, therefore, of the greatest interest for consideration. The indications are threefold: 1. To endeavor to re-establish gastric secretion, at least until such a time that it is clearly apparent that efforts in this line will continue futile. 2. To obviate the impaired motor function which, with the resulting atony, leads to stagnation of the ingesta, to fermentative changes, and finally to stretching and atrophy of the muscularis. 3. To administer digestants in those cases in which with fairly perfect motor function the general health still suffers, indicating lack of response to the excessive demands thrown upon the pancreas.

Although it is now established beyond question that the chief function of the stomach is its propulsive, and that gastric digestion, at best, is but imperfect and a preparatory process to final complete peptinization in the bowel through the more active pancreatic secretion, and that, moreover, perfect health is compatible with total suppression of gastric juice,[1] serious impairment in the secretory function is so apt to be accompanied by impairment of motility, that persistent absence of a digestive fluid must always be regarded with concern. However likely, therefore, the condition may be regarded as one of atrophy of the tubules, in which, naturally, efforts to restore lost parts would be futile, treatment should always be early and persistently directed toward such restoration. This is the more indicated since certain of the most efficient secretory stimulants serve the twofold purpose of improving the motor function if impaired, and of preserving it if intact. The remedies of most utility in this direction are the intragastric employment of electricity, the administration of HCl, and the intelligent use of the stomach douche. Electricity I place easily first. A large and increasing experience convinces me of its superlative value in all affections of the stomach characterized by impairment in the motor and secretory function. Under its use alone in numerous instances I have witnessed the return of free HCl and an active digestive secretion in cases of chronic gastritis, in which the secretory function has been long and persistently impaired. I have seen also coincident perfect restoration of a toneless muscularis.

I speak here of the intragastric application of one electrode. Percutaneous application of both poles, for obvious reasons, experience has shown to be practically valueless to influence either the secretory or the motor function. Faradism is especially of service in these cases both as a motor and a secretory stimulant. As percutaneously applied its influence in the latter direction must be *nil*, and as a motor excitant it can only be exerted indirectly through its action on the superjacent abdominal muscles, little can be expected from any save its intragastric employment. Harm even may result from its percutaneous use where atony exists with non-patent gastric orifices. Here stretching of a weakened muscularis may occur, as was suggested by Ewald.[2]

In but one of the three cases reported could intragastric electricity be employed for reasons elsewhere stated. In this case both galvanism and faradism were long and persistently tried, with a technique of proved utility, but in vain.[3] The effects on the greatly impaired propulsion were, on the contrary, as is usual, extraordinary, and thus, also, upon the train of ill-symptoms so originated. The stomach, which, although not dilated, contained frequently in the morning remnants of food eaten the night before, and rarely was found empty at the normal period after even a light meal, was, under the daily steady intragastric use of electricity, finally stimulated to a condition of even hypermotility, so that the employment of faradism had to be discontinued for an interval. After the continuous use of faradism, over a period of a number of weeks, not only was the stomach always found empty in the morning, but often it occurred that no remnants of the roll breakfast were present an hour after its ingestion, and five and one-half hours after a full dinner the wash-water contained only traces of food. In this case lavage with the hot douche was also long practised, and HCl was taken in full doses intermittently for a long time. These, doubtless, were also of utility as motor stimulants, although they were employed chiefly for their effect upon secretion. It is, therefore, perhaps unwise to attribute the benefit accruing, resulting finally in practical restoration to health, to the employment of intragastric electricity alone. The stomach douche and HCl had, however, been first used for some time before resorting to electricity, and improvement which had occurred under them, although apparent, was incomparably less than almost at once was noted from the use of intragastric galvanism and faradism. Electricity and the douche were used in this case only. Cases II. and III. refused to resort to the tube for purposes other than diagnosis. In Case II. this treatment was not insisted upon, as the administration of HCl and an intestinal disinfectant seemed efficient. HCl was continued, in doses of 6cc. to 8 c.c. of the dilute acid in 240 c.c. of water one-half hour before breakfast and dinner, for six months, and either B. naphthol or betol were taken after meals for the space of two months. No drugs have now been used for over a year. She has gained fifty pounds in weight, and is apparently in vigorous health, although gastric secretion continues absent as before. Case III. was regarded as a subject little likely to be permanently benefited by local or, indeed, any treatment, so that the use of lavage and electricity were not urged in her case. Improvement in gastric symptoms was striking under the use of HCl alone. This, first prescribed when she came under observation in 1891, has been voltarily, quite steadily, continued to the present. Curiously, symptoms of distress which had been felt for a long time after even light food, and nausea and vomiting on rising in the morning, are always held in abeyance by a resort to the acid, and disappear on its steady employment. When omitted for a short season these symptoms promptly recur. In this case, unlike the other two, HCl was taken after meals, and in several divided doses of 20 to 30 drops at intervals of fifteen minutes.

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[1] As demonstrated in two of my cases, in the reported case of Ewald's, and in at least one of Einhorn's.

[2] Berliner klin. Woch., 1892, No. 26.

[3] Inability to re-establish secretion by this treatment, with restoration of motility, has tended more than anything else to indicate that in this case hopeless atrophy of the gastric tubules exists.

As concerns lavage, or, more properly, the stomach douche, although of generally acknowledged utility as a secretory stimulant, in atony of the stomach it has been regarded with less favor. I need here only say that my experience, a not insignificant one, is favorable to its judicious employment as a motor excitor, although it has proved far less useful than electricity. Employed with water as hot as can be comfortably borne, either plain or the first one or two portions that are introduced containing a weak solution of soda, or of soda and salt, and never distending the stomach in the procedure, most gratifying improvements in my hands have often resulted in atonic conditions of the muscularis. In Case I., so used for a time in the early part of treatment, without coincident employment of HCl or of electricity, some improvement in motility was soon noted. Food ceased to appear in the wash-water in the fasting stomach in the morning, and the stomach became emptied earlier than usual after a meal. But on the discontinuance of the douche, although it had been steadily used for some time, the condition of marked atony recurred, only to be finally dissipated with electricity.

It is of interest to briefly inquire as to the mode of action of HCl in these cases, in two of which it seemed of such distinct utility. In Case II., in which the most permanent benefit resulted from the acid, so that finally it could be discontinued, it was taken, as in Case I., in doses of 4 to 8cc., in approximately decinormal solution strength, two to three times daily, shortly before meals. To obviate the disagreeable taste, it was taken through a small stomach tube by aid of a funnel, the tube being passed by the patient into the first part of the œsophagus.[1] The effect of the administration of HCl fasting has been before dwelt upon—its power to convert the potential proenzymes into the active ferments and to promote secretion of the latter.[2] More than this, it is supposed, and on good evidence,[2] to act as a direct stimulant to its own secretion. Under its employment, in cases in which, through catarrhal disturbances, free HCl has been long absent, it has been found to return. In the cases here studied benefit accruing was obviously not in this direction. It could have resulted only from influencing impaired gastric motor power, since, as a local disinfectant, it did not seem indicated. Leube's experiments led him to believe that increased acidity toward the end of gastric digestion was the main cause of the onward progress of the food-mass into the duodenum, and although the later observations of Fleishner[3] did not support his contention, I am inclined to believe from past observations, and more especially the result in these cases, the benefit in which can scarcely be otherwise explained, that HCl has in certain cases a markedly beneficial influence on gastric propulsion. By many the utility of this acid, in cases in which benefit results from it, is believed to be due chiefly to its antizymotic action. But in cases with absent HCl it is practically impossible to administer with comfort to the patient sufficient, after a large meal, to satisfy the albuminoids of the food, and leave even traces apparent as active free acid. As I have elsewhere[4] stated, it is unquestionable that "as an antifermentative and antizymotic HCl takes high rank. Putrefactive changes in the stomach originating through stagnation of food with deficient secretion, permitting the development and multiplication of bacteria, with the presence of irritating organic acids and poisonous leucomaines, cannot occur with a small excess of free HCl."

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[1] This is my usual mode of administering large doses of HCl. Habituation to this use of the tube is easily acquired by the more nervous, in whom its passage into the stomach for the purpose of lavage or siphonage of the gastric contents may be always annoying.

[2] See my paper: "A Consideration of Some Modern Therapeutic Agents in the Treatment of Diseases of the Stomach." Therapeutic Gazette, February, 1893.

[3] Berliner klin. Woch., 1877, No. 7.

[4] Therapeutic Gazette, February, 1893.

But in these cases evidences of fermentative changes in the stomach were, as a rule, singularly absent after the light trial meal usually employed containing little albuminoids, which alone permitted the full dose (4 c.c. to 8 c.c.) of dilute HCl administered, when tried for the purpose, to appear at the end of an hour as traces of free, uncombined acid. Moreover, in Cases I. and II. the acid was always taken fifteen to twenty minutes before meals, so that a good portion of it had disappeared from the stomach at the time of ingestion of food. In Case III., in which continuous relief was experienced from symptoms of indigestion by it, it is habitually taken after meals.

The reason for its probable inutility as an antiseptic in cases such as these, with complete absence of secretion of this acid, also measurably holds for its utter inutility administered as a digestant, even when pepsin (here also absent) is coincidentally used, and in full doses. Without pepsin in these cases it would naturally be inefficient,[1] since peptinization could not of course advance beyond the syntonin stage. With pepsin it would be useless, because sufficient HCl could not be also given to more than very incompletely satisfy the albuminoids; certainly enough could not be administered to impart and maintain a sufficient degree of acidity to the food-mass to admit of peptinization. The amount of acid a given weight of proteid will combine with before saturation of its molecules occurs, permitting traces to appear in the free state, is remarkable. This fact, which I had for a long time insisted upon, is worthy of consideration by all who still thoughtlessly adhere to the ancient, senseless therapy of a single minute dose of HCl after meals, in conditions in which its deficiency is supposed to exist, expecting results from the same. Attention has recently been redirected to the matter by Chittenden in his Cartwright Lectures on Digestive Proteolysis. Quoting Blum's experiments, Chittenden points out that with a daily consumption of 100 grammes of proteids there would be required no less than 4½ litres of 0.2 per cent. HCl daily, and still none would remain to be apparent as free acid, so essential for continued and complete peptinization.

In a series of experiments which I made[2] in Cases I. and III., and with numerous others unrecorded in which there was merely absence of *free* HCl, I found that, in an hour to seventy-five minutes after the roll breakfast and 300 c.cm. of $\frac{N}{10}$ HCl solution, only traces of this acid were apparent in the filtrate in the free state—the highest as 0.018 per cent. In Case I., when the acid was thus used, the homogeneous, yellow, gruel-like appearance often noticed in the removed contents after the trial meal, and evidently due to regurgitation of a digestive fluid of biliary and probably pancreatic secretion from the duodenum, had disappeared. Portions of the roll were now present unchanged, presenting merely a water-soaked appearance. Should an assistant to digestion be required in these cases, which I regard as rarely likely, and which contention the conduct of the cases supports—two of which have been for over a year in perfect physical condition without it—it must be looked for in another direction than pepsin and acid. If attention to impairment of motility does not cause disappearance of symptoms, and evidences of derangement of health are still apparent, indicating, perhaps, only temporary inability on the part of the pancreas to furnish a digestive secretion to meet the requirements, full doses of a pancreatic preparation or of an active preparation of papain, must be employed. Pineapple juice, the proteolytic power of which is very great, could also be resorted to, although no form of this, I believe, is now on the market. Meyer regarded the duration of the vicarious digestive function of the bowel as limited, at most from a few months to two or three years. That compensatory hypertrophy of the secreting structure of the pancreas may occur is shown in the case of atrophy of the tubules reported by Henry and Osler, in which death finally resulted with symptoms of pernicious anæmia. That perfect bodily nutrition may be maintained for a long time in these cases is demonstrated by the condition in one of Einhorn's cases under observation for four years, by the case of Ewald's, before mentioned, and by Cases I. and II. of my own. Both of the last now weigh more than ever before, eat with impunity, and have no gastric symptoms.

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[1] Unlike in that large class of cases so promptly benefited by acid alone, in which with simple absence of *free* HCl slight secretion of acid still occurs, but not sufficient to convert the scarcely diminished propepsin into the active ferment, readily accomplished by the administration of HCl.

[2] See Therapeutic Gazette, February, 1893.

108 SOUTH SEVENTEENTH STREET.

REVIEWS.

LEPROSY: IN ITS CLINICAL AND PATHOLOGICAL ASPECTS. By DR. G. ARMAUER HANSEN, Inspector-General of Leprosy in Norway, and CARL LOOFT, formerly Physician to the Lungegaarde Hospital. Translated by NORMAN WALKER, M.D., Assistant Physician for Dermatology, Edinburgh Royal Infirmary. With numerous photographs and colored plates. Pp. 145. Bristol, 1895.

THE name of one of the authors of this book, Armauer Hansen, the discoverer of the bacillus of lepra, is in itself sufficient guarantee that something more than a compilation may be expected, and in this respect we have not been disappointed. Dr. Hansen has for more than twenty years been engaged in studying leprosy in Norway and elsewhere, and the good work that he has accomplished entitles him to be listened to with respect. His words are authoritative. The translator, Dr. Norman Walker, has also done his part well, with the result that we have the subject of leprosy presented in a simple, intelligible manner that commands admiration. We know of no better exposition of leprosy in any language. There are certain points upon which authorities differ, but Hansen is fair in all his statements, and everywhere in the book we recognize the hand of science guiding the author. Hansen's view of the position of the bacilli in the cells is opposed by Unna. The author denies the occurrence of the nodular deposits of the disease on the palms and soles, while, as is well known, Hillis's experience with the disease in Africa shows that these regions are not infrequently invaded. In Norway, at least, the palms and soles are very seldom, if ever, attacked, for Danielssen also with his large experience never encountered the disease here. The author divides the varieties of lepra into the "nodular" and the "maculo-anæsthetic," the latter term being used in preference to "anæsthetic." In certain districts in Norway the nodular form predominates; in others the maculo-anæsthetic does not predominate, but is present almost as frequently as the nodular. The chapter on the pathological anatomy is full of interest. The author is by no means optimistic regarding the good results to be obtained from remedies in the treatment of the disease, stating that as yet we are unable to destroy the bacilli with remedies, either internal or external, so that it only remains to us to prevent infection, which can be attained by isolation of those affected. Hansen thinks that the best measures are those which have been taken in Norway, where the lepers are isolated at their own request, and where the communities can get rid of the disease, if they will, since the sanitary authorities have the power to order the leper to live sufficiently isolated from his family, and, if he cannot or will not assent to this, can compel him to enter an asylum. The doctrines of cleanliness and isolation are constantly preached. The State pays all of the expenses of the lepers in the asylums, and their families are thus relieved of the lepers who, through the disease, are for the most part unfitted for work. We commend the book heartily to all interested in leprosy, and trust that it may reach the eyes of sanitarians as well as of physicians. Its teachings are sound, and help us greatly in dealing with the disease. L. A. D.

ATLAS OF THE DISEASES OF THE SKIN, IN A SERIES OF ILLUSTRATIONS FROM ORIGINAL DRAWINGS, WITH LETTER-PRESS. By H. RADCLIFFE CROCKER, M.D., F.R.C.P., Physician to the University College Hospital, London. Edinburgh, London, and New York.

NOTICE has already been directed by the JOURNAL to the first three fasciculi, issued some time ago, of this magnificent illustrated work on diseases of the skin. New fasciculi have since been published, and the excellence of the plates and the variety and number of diseases depicted warrant us in making critical mention of the parts since received. Fasciculus IV. contains eleven portraits, dealing with herpes zoster, pemphigus, lichen scrofulosus et pilaris, bromide of potassium eruption, and lepra. They represent for the most part typical cases, several of them unusually severe types of eruption, as the pemphigus and bromide cases, the latter especially being an exuberant form, with vegetating and crusted lesions, indicative of the great cutaneous disturbance which this drug is capable of producing. The plates of lepra are good, but lack color, having pale washed-out tints, which are not characteristic nor peculiar to this disease. The macular, marginate lesions, with a wide border, represented in one case, are instructive from a diagnostic point of view.

Fasciculus V. contains a strongly painted portrait of that dread disease, pemphigus foliaceus, of which but few cases have been met with in this country. Crocker's case is much like that depicted in Hebra's *Atlas*, but shows a much less exfoliative state of the skin. The entire skin of the body is involved. We are pleased to note a fair representation of pityriasis rosea, a disease which is not rare in the United States, and one which is often mistaken by the general practitioner for either syphilis erythematosa or rubella (German measles). It bears not infrequently resemblance to both diseases. The portrait before us lacks the lamellar or furfuraceous scaliness so characteristic of the affection, and does not show sufficiently the difference of color between the patches and the sound skin. Two cases of morphœa are given, which are designated by the author circumscribed scleroderma. The cases depicted represent, we should say, somewhat unusual forms of this disease, if we take the well-known series of Guy's Hospital models of this affection as typical. Ichthyosis hystrix unilateralis, pigmented and unpigmented moles, and tinea tonsurans (four portraits) are also given in this fasciculus. It will thus be noted that each fasciculus of the *Atlas* contains many more portraits than are usually given in a single fasciculus of such atlases.

Fasciculus VI. contains urticaria pigmentosa, eczema vesiculosum, eczema pustulosum, hydroa herpetiforme, psoriasis, xeroderma pigmentosum, melanotic sarcoma, and secondary sarcoma of the skin. The first of these, urticaria pigmentosa, is a rare disease, seldom depicted in atlases. It portrays the form of the lesions, but does not give the peculiar tints which are usually met with in this disease, indicative of their urticarial nature. It is, however, too much to expect that all the portraits should be of equal excellence in a work of such magnitude as this, especially where it is obvious that the brush of more than one artist is responsible for the pictures. A fair portrait of hydroa herpetiforme, or dermatitis herpetiformis, may also be remarked upon. Both the coloring and the lesions are too uniform, we think, to do justice to this disease as usually met with, but the pictures serve for diagnostic purposes and bring out the herpetic peculiarity of the disease which distinguishes it from other diseases with which it used to be confounded.

We commend, as being admirable in every way, the beautiful portrait of xeroderma pigmentosum, a disease which the distinguished author of the *Atlas* has in his earlier works done much to elucidate. It represents a grave case, and shows well the varied lesions usually met with in an advanced stage of this rare disease.

Fasciculus IX. contains three figures representing hydroa herpetiforme (dermatitis herpetiformis of Duhring). We are unable to see the justification of the use of the term "hydroa" for this disease, the word signifying a "watery" lesion, whereas it is well known that the lesions in this disease may be erythematous as well as vesicular or bullous.

There is a good picture of the rare disease pityriasis rubra, showing the peculiar and abundant "papery" desquamation so characteristic. Next we notice a plate with no less than six colored drawings illustrating the several phases of ichthyosis—all rare varieties of the disease, including circumscribed forms which incline to attack the hands. This fasciculus is very profusely illustrated and contains much that is interesting. The coloring is up to the high standard of preceding parts and with a few exceptions leaves nothing to be desired.

Fasciculus X. contains several unusual forms of eruption after vaccination, designated erythema papulatum, impetigo contagiosa, and a rare manifestation not named. Other plates show elephantiasis and ichthyosis of the leg, both ordinary forms of these diseases; seborrhœic dermatitis; alopecia areata; and tinea versicolor. This fasciculus, like the preceding one, is admirable.

As especially noteworthy in Fasciculus XI., we may refer to the portraits of lymphangiectodes, papilloma with xeroderma pigmentosum, milium in an infant, and comedones of childhood. Unusual forms of tinea circinata are also portrayed, as well as lichen planus acutus and acneiform folliculitis of the buttock.

We cordially recommend the *Atlas* to all interested in cutaneous medicine. It is a good and handsome work. The publishers are Macmillan & Co., London and New York. L. A. D.

INDIGESTION, AN INTRODUCTION TO THE STUDY OF THE DISEASES OF THE STOMACH. By GEORGE HERSCHELL, M.D. London. Second edition. New York: G. P. Putnam's Sons. London: Balliere, Tindall & Cox, 1895.

DIGESTIVE PROTEOLYSIS, BEING THE CARTWRIGHT LECTURES FOR 1894. By R. M. CHITTENDEN, Ph.D., Professor of Physiology and Chemistry in Yale University. Tuttle, Morehouse & Taylor, 1895.

THE man who essays a work dealing with indigestion cuts out for himself a task worthy his steel, however powerful. Though he limit it to the simpler processes of the solution of food, properly called primary digestion, he has before him a problem most complex.

Considerations of depth and scope are invariably embarrassing, but the art of the teacher is measured by the felicity of this adjustment.

In the work of Dr. Herschell we realize the truth of his preface, that it is incomplete. It is, however, especially fitted for students, and from that standpoint we may discuss it.

The author yields at times to the temptation to be dogmatic beyond the legitimate possibilities of scientific statement. This is more noticeable in frequent unqualified statements, which are either not quite true, or but partial truths, than in the advancement of faulty theory.

We regard this as especially unwholesome for the student, who is not in possession of enough data to enable him to cull out from an otherwise useful work its defects.

In the practical expounding of the subject it does not seem to us that the author keeps sufficiently prominent the fact that the digestive manifestation is usually a concomitant or consequent symptom of remote causation. While calling attention to the looseness of statement, which is noticeable throughout the work, it is easy to be hypercritical; to exact from the volume a quality beyond its pretensions. Notwithstanding that possible extenuation the author has a right to be considered seriously, and evidence of lack of care in detail is the most serious obstacle to general acceptance of a product.

The contradictory allusions to the antiseptic quality of bile on pages 20 and 46; the marked insufficiency of support offered to the theory that saliva is necessary to the excitement of gastric secretion, on page 15; the lack of effort to elucidate the very complex facts associated with fat emulsification, made more obscure by statements as to the reaction of chyme, on page 17; and emulsification, on page 20, are illustrations of the stumbling-blocks which are unnecessarily left in the path of the student.

The author's conclusion as to the influence of alcohol indigestion is not to be determined from his discussion. His facts presented on page 34 deal with quantities so far in excess of reasonable amounts, as to bear no satisfactory relation thereto, and his entirely sound deprecation of alcoholic abuse on page 32 is equally far from this point.

The greater portion of the work deals with the practical aspects of stomach disease and diagnosis, and is a compact and systematic exposition of the now accepted methods of investigation of digestive conditions, so far as is possible by local means.

Chapters I. and II. are preliminary generalizing statements as to what constitute digestion and indigestion. Chapters III., IV., and V. are devoted to the detail of inquiry into actual conditions existing, and may be followed with satisfaction as a manual of clinical procedure. Occasionally the author drops into a discussion of differential diagnosis in matters too remote and complex for adequate handling in a work of this size.

Chapters VI. and VII. are devoted respectively to treatment and clinical analysis. It is in respect to treatment that one's position is most liable to attack upon this subject or upon any. Hence we do not desire to discuss the details of treatment proposed for any given condition, but to simply reiterate the statement that the ultimate causation is not sufficiently indicated in this study.

The time has come when medical consultants must be broad diagnosticians and rational therapeutists, and to that end the literature of the future emanating from distinguished teachers must be philosophical.

The illustrative cases in Chapter VII., though offering each a suggestion as to local conditions, are none of them full enough in statement to admit a diagnosis as to what ails the patient, however much may ail his stomach. In spite of these criticisms this volume is of decided value, being easy of reference, clear in arrangement, and very full of sound information, much of it the outcome of the author's large experience. The work is valuable to practitioners as well as to students. The bibliography is very complete and the index satisfactory.

The work of Professor Chittenden is of noticeable quantity.

Being but a brief sketch instead of a treatise, its burden as to completeness is less, as its chance of escaping controversy is greater. The first of three lectures deals with the general nature and production of euzymes, and is instructive, clear, and broad. Most interesting is the author's illustration of the method by which katalytic action may occur, and, though no pretence is made that the exact demonstration is offered, the presentation to the reader of a definite hypothesis as to how it may occur is very acceptable in the especial analogy drawn.

A demonstration of the possibilities of more or less digestion by agents other than organic is prominent in this lecture, and is of importance in calling attention to the essentially chemical nature of digestion. The tendency of the author is to simplify the array of products during digestion, as far as is compatible with emphasis of the fact, that digestive products are in series. In lecture second these series are discussed with especial reference to gastric digestion.

A clear enunciation of the co-ordinate relation of pepsin and acid, with the advancement of the view that the two constitute a unit of activity, though not new, is forcible.

The relative affinity of proteids for acids in various stages, particularly bearing upon the detection of free acid, and the withdrawal of combined acid by elements having greater affinity, is very satisfactorily discussed.

The influence of accumulated peptone and the toxic nature of albumoses are considered finally in this lecture.

Lecture third deals with pepsin proteolysis and its relation to the incomplete products of pepsin change. Particularly interesting is the suggestion found in facts now determined as to the nature and fate of lysatin. The volume closes with a thoroughly fair and cogent discussion of the agency and method by which the soluble proteid food becomes finally fitted for appropriation; the process which should be called secondary digestion. Limiting himself too closely, as we think, to the activities resident in the intestinal wall, the author still deals with the subject clearly. This work, small in volume, is by no means so in dignity.

It serves to impress the importance of physiological chemistry, if such impress be necessary.

It presents an orderly statement of complex facts, and is, moreover, a work of graceful utterance, logical thought, and good English.

H. B. F.

A Manual of Diseases of the Ear for the Use of Students and Practitioners of Medicine. By Albert H. Buck, M.D., Clinical Professor of the Diseases of the Ear, College of Physicians and Surgeons, Columbia College, New York, etc. Second revised edition. New York: Wm. Wood & Co., 1895.

We are told in the preface of this manual that "the present edition differs from that of 1889 in the following respects: A new chapter, entitled 'Analysis of Symptoms,' has been introduced as Chapter III.; some additional text has been added to the chapter on 'Chronic Purulent Inflammation of the Middle Ear;' and the section devoted to a description of operations upon the mastoid process has been entirely rewritten and very much amplified. While there are other portions of the book which I should now write somewhat differently if a favorable opportunity for so doing presented itself, the alterations which I should introduce would be of trifling importance, and certainly would not justify the expense of making entirely new plates for these portions of the work."

The new chapters in this edition, enumerated by the author in his preface, the whole of which we have quoted, are characterized by complete and thorough revision, excepting the chapter on Chronic Purulent Inflammation of the Middle Ear. Here the operation of excision or resection of the carious and necrotic membrana tympani and ossicula is entirely ignored. This unfortunately limits the usefulness of the work, as it fails to give the most important directions possible for the treatment of this vital ear malady, and the warding off of its most dangerous sequelæ, mastoid necrosis, sinus-thrombosis, pyemia, and brain-abscess.

It would be difficult to find an aurist of to-day who would reject this invaluable means of treatment of chronic purulency of the ear, which is, after all, only carrying out an ordinary indication of antiseptic surgery in ear disease. And we are, therefore, greatly surprised to find Dr. Buck so far in the rear in so important a matter. As we have often said before in other places, this method of cure of chronic otorrhœa prevents mastoid disease; but an operation for the relief of mastoid necrosis, while it may temporarily relieve the chronic mastoid disease, will not cure the chronic otorrhœa which has caused it. The otorrhœa continues until the necrotic elements in the middle ear are eliminated.

But so long as the chronic otorrhœa continues the patient is liable either to another mastoiditis or some other vital sequela of chronic purulency in the drum-cavity. This is all the more impressive when an otorrhœa continuing after a mastoid trepanation is finally promptly cured by excision of necrotic tympanic tissues.

In regard to "acute diffuse mastoid osteitis," to which the author devotes nine pages, we must insist upon what is now the accepted teaching of *antiseptic* aural surgery, that *acute* mastoiditis is the result of improper treatment of the primary acute tympanic inflammation. If the latter is not secondarily infected, as it too often is, by a septic, irritant treatment with syringes, swabbings, and insufflations of septic medicaments, or inflations of septic secretions from the nares through the Eustachian catheter and inflation-bag, into the drum-cavity, acute mastoiditis will not ensue.

There is only one treatment of any value in acute otitis media, viz., prompt paracentesis if there is not early spontaneous rupture of the membrana tympani, and then antiseptic drainage with a narrow strip of iodoform-gauze or carbolized gauze, and nothing else. All moppings, syringings, etc., now become septic irritants and *stop* the discharge. Thus pathogenic germs which are successfully escaping from the ear are retained and dammed up in the middle ear, the antrum, and the mastoid cavity, and the patient then suffers from a secondary infective inflammation of the mastoid. Too often this is the result of the engrafting of the staphylococci from the finger of the patient or the physician, or some septic medicament, upon the already inflamed ear.

When the proper treatment of acute otitis media, which can be conveyed in a few words, is fully appreciated and carried out, both by physician and laity, the numerous pages now written on "mastoid disease" will be useless, and the number of cases now reported, with increasing frequency it would seem, will diminish. But no diminution ot this important disease will take place until its causation by improper treatment is checked.

This manual, according to its title-page, is prepared for "students and practitioners of medicine," but it fails to tell them some important facts, as we have stated, and is entirely too voluminous in matters of interest only to the specialist to be of value to the general physician—a fault it shares with nearly all treatises and manuals on the ear. If these books are to be useful for "students and practitioners of medicine" they must grow smaller instead of larger. Large ones may be of service to the specialist, but bulky ones can never be convenient for the busy medical student or general physician. This manual under consideration contains nearly 500 *closely leaded* pages; a mass of difficult reading. For this, however, the publisher and not the author is responsible.

C. H. B.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,
PROFESSOR OF CLINICAL MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO ST. MARK'S HOSPITAL.

ANARCOTINE.

DR. WILLIAM ROBERTS calls attention to this alkaloid of opium which he believes has been neglected. This drug which is generally known as narcotine, having been so named by its discoverer, Derosne, has been renamed by Palmer because it has been shown to be quite devoid of narcotic properties. Smyrna opium contains one-fourth as much of this alkaloid (2 per cent.) as it does of morphine (8 per cent.), while in Bengal opium, which is popularly used in India, it is present in larger quantity (morphine 4, against narcotine 6 per cent.). This drug came into notice in India about fifty years ago when quinine was very scarce and expensive. The important investigations of Palmer show incontestably that it is scarcely inferior—and in some classes of cases is superior—to quinine as an antiperiodic. From the observations of nearly one thousand cases he concludes that in 70 per cent. the fever was arrested at the second paroxysm after the medicine was administered; in 20 per cent. the arrest was equally sure, but not so quick; and in 10 per cent. it did not appear to have any curative effect. When there is an intolerance of quinine it was decidedly more efficacious. Garden, a few years later, believed that it was next in value, as an antiperiodic, to quinine. The doses range from one to three grains, and it is perfectly insoluble and tasteless. The chloride is very soluble and of an intensely bitter taste.—*British Medical Journal*, 1895, No. 1807, p. 405.

THE TREATMENT OF DIABETES.

M. ALBERT ROBIN notes that diabetics have a tendency to the loss of mineral substances by the urine. This loss should be avoided; for instance, by the use of sodium chloride in food, naturally salt foods, as olives. To replace potassium, green vegetables or cauliflower and chicory which are rich in that salt; or sixty to ninety grains of potassium tartrate can be given in wine at meals, or *sel de seignette* [potassium and sodium tartrate] in a quart of water. To remedy the loss of phosphates, magnesium and calcium, the glycerophosphates of these metals may be employed, or the diet may be regulated. Bouillon is not only a tonic to the stomach but also a perfectly assimilable solution of the inorganic salts and represents the principal salines needed by the organism when undergoing a process of demineralization. The drug treatment comprises three groups: 1. Antipyrin. 2. Arsenic, codeine, alkaline earths, quinine sulphate. 3. Valerian, opium, belladonna, potassium bromide. Quinine, the alkalies, and cod-liver oil may be used with either of the three groups, but as adjuvant medication. Of the first group, antipyrin diminishes the general failure of assimilation, the coefficient of oxidation of albuminous material, sulphur and phosphorus, the effect upon the last two being evidence of its action upon the nervous system. It should be given in from thirty to forty-five grains per day, the latter being the maximum, together with one-half this quantity of sodium bicarbonate. This treatment should not be continued for more than five days because it is likely to give rise to albuminuria, an undesirable complication in diabetes. If the diabetic is already albuminuric this drug is almost contraindicated, although in some cases it may diminish the sugar without increasing the albumin. It should also be limited to the fat diabetics; its action is almost *nil* in pancreatic diabetes. Anorexia, rapid emaciation, and feebleness also constitute contraindications. As adjuvant treatment in this first stage are cod-liver oil in one or two teaspoonful doses *per diem*, preferably before the meal. If it is not well borne, butter can be substituted. During hot weather it should be omitted. The oil is indicated for those who become easily chilled and for the descendants of the tuberculous. The alkalies are used as above—to aid the use of antipyrin. In watching over the intestinal functions for constipation, five drachms of *sel de seignette* in a little tepid water, taken before breakfast, is the purgative of choice. Upon the fourth or fifth day the second stage of treatment is entered upon. Of the drugs used for this stage, quinine sulphate lessens the destruction of the albuminoids and of organs rich in sulphur and phosphorus, diminishes the excretion of carbon dioxide and the absorption of oxygen. Arsenic reduces general oxidation and aids nitrogenous and phosphorous metabolism. The alkalies and alkaline earths diminish the functional activity of the hepatic cells, the general activity of all the tissues, and retard the formation of urea and uric acid. Codeine shares in the properties of the opiates, diminishing the coefficients of the nitrogen-utilization, the glycosuria and the polyuria. These drugs are used as follows: Before luncheon a six-grain capsule of quinine sulphate, to be continued for six days, omitted four, and renewed for six days. Before breakfast and after dinner a capsule containing sodium arsenate, lithium carbonate, codeine, and extract of cinchona made up with *poudre thèricale* [the well-known example of polypharmacy], the last merely to obtain its toleration by the stomach, and to administer a mild opiate [less than 1 per cent. of crude opium]. After this has been employed for five days the third stage is reached, and now then comes into use opium for its action upon nutrition, belladonna for the nervous system, valerian to relieve the polyuria, and potassium bromide which diminishes the elimination of the earthy phosphates. These drugs are used as follows: for eight days belladonna, valerian, cinchona, with the extract *thébaïque,* are administered with lessened, later increased interval of dose. During this time, preferably at the meals, the patient should drink boiled water to which 8 *per mille* of sodium bicarbonate has been added. Cod-liver oil, which may have been continued during the second stage, is now omitted, but the wine of quinquina is continued during the meal. If opium and belladonna are not well borne, or in case of nervous women, potassium bromide in daily amounts of from thirty to forty-five grains in three doses, may be substituted. If the diabetes is florid, of alimentary origin, and the sugar abundant, the first stage of treatment, followed by a prolonged and a severe *régime* may be sufficient for cure. If the sugar does not disappear, but is only reduced, the diminution of sugar should be made greater, not by a continuation of the antipyrin, but by proceeding to the second stage for about fifteen days. If then the sugar, reduced by the antipyrin tends to increase toward the end of this stage, it is necessary to go to the third stage. If after this there is still sugar it is necessry to recommence the series; but whether it disappears or not, it is necessary to interrupt the drug treatment for a month. During this time the alkaline waters should be continued if the patient passes sufficient urea. If, however, this is diminished, or the complaint is made of feebleness, the alkalies should be abandoned and an iron preparation should be administered. If, after any stage of treatment, the sugar has disappeared, the patient should not consider himself cured, but he should resume, only with the greatest care, the use of starches, then fruits and sugar. Of three hundred cases treated, none of whom passed less than twenty-five drachms of sugar daily, twenty-four were completely cured. Probable cures were obtained in twenty-five cases—that is to say, when the sugar had been absent for several months, it would reappear under the influence of strong mental emotions or breaches of diet. But a short course of treatment usually sufficed to bring the glycosuria to an end. These cases which were markedly and permanently benefited were thirty-three in number, never departing from a certain diet and only returning occasionally for treatment. With seventeen others the sugar never disappeared completely, but there were present less than thirteen drachms, and they increased their body-weight.—*Bulletin Géneral de Thérapeutique*, 1895, 26 liv. p. 9; 28 liv. p. 49.

DOTT. V. ASCOLI ED A. ZERI report a single case treated by oxygen. A man of sixty presented the usual symptoms. The daily amount of urine was about three quarts of a specific gravity of 1026; albumin was absent; sugar was present in the proportion of twenty-five *per mille,* and the sediment contained abundant crystals of uric acid. The inhalation of oxygen was continued for three months, about forty-five gallons being used each day. After this time a diet rich in carbohydrates did not cause the appearance of sugar in the urine. The purpose of the oxygen was, as stated by the authors, to bring about the power of consuming the sugar in the organism so that it should not be excreted in the urine.—*Il Policlinico,* 1895, No. 11, p. 337.

THE TREATMENT OF ENTERIC FEVER ON THE ANTISEPTIC PRINCIPLE.

SURGEON R. H. QUILL reports that of thirty-six cases two died, a gratifying experience in India where the mortality is considerably higher than in temperate climates. The particular combination he uses is: Purest carbolic acid 36 minims, spirit of chloroform 2 ounces, compound tincture of cardamon ½ drachm, syrup of hemidesmus 2 ounces, chloroform water 12 ounces. The dose is one ounce with an equal quantity of iced water every second or third hour immediately after food. No untoward symptoms have arisen. Although in one instance the patient took from first to last over two ounces of pure carbolic acid, yet the urine never became black, nor anything approaching that color; occasionally it became high-colored. In India if typhoid fever is treated expectantly with a well-arranged dietary and efficient nursing one expects a mortality of twenty to thirty per cent. If, in addition to this treatment, the above-described method is employed we will find a reduction of the mortality to one ranging from five to twelve per cent.

In this paper we find a novel method of applying an ice-poultice when there is noted distention of the abdomen or the appearance of blood in the stools. A light tin frame is procured about fifteen inches long by twelve inches broad, and with edges two inches high. A floor is formed by attaching to the sides of the frame a piece of flannel lined on its outside with oiled silk. The trough thus formed, having been partly filled with ice in small lumps, is attached by means of tapes to an ordinary surgical cradle, and suspended over the patient in such a way that although the flannel floor of the trough is in close apposition to the whole of the abdomen there is still no pressure upon it.—*Indian Medical Gazette*, 1895, No. 7, p. 249.

DR. A. P. HULL has treated thirty-two patients during six months. The first eleven were treated with silver nitrate and quinine given continuously from the beginning to the end of the disease. Of these two died. The remainder were treated with guaiacol, internally and externally, with an occasional one-tenth grain dose of calomel, three or four times a day until slight purgation. The guaiacol was given in from one-half to one and one-half drop doses every two hours night and day, according to the tolerance of the patient. The temperature was controlled by the external application of guaiacol and cold sponging. The former lowers the temperature in about thirty minutes, and is preferable to the cold bath as it is equally efficacious and can be applied when the latter is not applicable. The effects will last from three to four hours, but the amount should be small at first—five to ten drops—and gradually increased, as it is liable to give the patient a chill. The largest dose used at any time was twenty drops. It was applied over the abdomen, which was first washed with soap and water and dried. The drug was then slowly dropped on the parts, carefully rubbed in, and covered with oiled silk. The author concludes that (1) the antiseptic treatment is the rational one; (2) guaiacol is a safe remedy and prevents the toxin-poisoning of the later stages; (3) it will lower the temperature when applied externally; (4) the typhoid patients do better by keeping the bowels acting up to a certain point, rather than checking them, and will derive comfort and benefit from daily douching of the large intestine with warm or cool water.—*The Therapeutic Gazette*, 1895, No. 8, p. 508.

THE TREATMENT OF PERITYPHLITIS.

MR. H. A. CALEY includes, under this term, the different varieties of local peritonitis originating in the region of the cæcum, but usually dependent upon lesions of the vermiform appendix. His classification is as follows: 1, simple, non-suppurating; 2, suppuration resulting in abscess; 3, with general peritonitis; 4, relapsing. The last three classes require surgical measures. On the other hand, a large proportion of cases do well under medical treatment. Absolute rest in the recumbent posture is the first essential, and must be maintained until the subsidence of all symptoms, and the disappearance of all local signs. A liquid and carefully adjusted diet should be adopted. Milk when used should be boiled and diluted with barley water or its equivalent; if given in measured doses and at stated intervals, the danger of over-feeding will be obviated. Beef-tea, soups, meat-juices, or whey may be given in connection with or substituted for the milk. Opium is of use when administered with discrimination and discontinued as soon as the conditions which indicated its employment have ceased. These indications are to allay pain and to prevent peristaltic movements of the intestine lying in the right iliac fossa. Leeches, of which three to six may be applied to the right iliac region, are unquestionably capable of affording marked relief, and are frequently employed with highly beneficial results in the earlier stages of the affection. Fomentations are in general use for the relief of local symptoms, alone or in combination with opium or belladonna. Poultices are less desirable as a rule. The local application of an ice-bag has been employed with satisfactory results, but, on the whole, preference may be given to fomentations as being more generally applicable. When the acute stage is passed, evacuation of the bowels may be most beneficial; enemata are the safest and most generally applicable method. When once the acute symptoms have subsided the cautious use of non-irritant purgatives, as the salines, is proper. Sodium sulphate in from one- to two-drachm doses frequently repeated is usually given. Or castor oil, a teaspoonful every half-hour until a stool is obtained, or calomel in divided doses may be preferred. Antiseptic drugs, as salol, naphtol, to check intestinal fermentation, modifying the virulence of the micro-organisms present in the intestinal tract, may be of service. As preventive measures, attention to the digestion, a daily action of the bowels, massage of the abdomen, associated with suitable exercise, may be cited. Important is the administration of an intestinal antiseptic, the most efficient being salol in milk or in a cachet, in ten-grain doses night and morning.—*The Practitioner*, 1895, No. 326, p. 138.

The Results of Haffkine's Anti-choleraic Inoculations in Cachar.

Mr. Arthur Powell furnishes the statistics of cholera which occurred at the Kalam, Karkuri, and Degubber tea estates since the inoculations were commenced, February 9, 1895. No case of cholera has occurred among those who had undergone the second inoculation. Among the uninoculated inhabitants, who numbered 3276, there were 47 cases of cholera, with 20 deaths; among the inoculated, numbering 2936, 3 cases, with 2 deaths. It is quite likely that one of these patients died from the perforation of a dysenteric ulcer, since she was suffering from sloughing dysentery a week before her death. The period covered by the statistics extends from the above date to

May 28, 1895. The results appear to be favorable, and it is likely that the inoculations will become more frequent.—*Indian Medical Gazette*, 1895, No. 7, p. 253.

Calomel.

Dr. W. Blair Stewart has made a clinical study of the use of this drug in 144 cases, chiefly of gastro-intestinal disorders. He finds that 1 grain of thoroughly triturated calomel is equivalent to 5 to 10 grains of the untriturated drug. If given for its purgative effect or for its action on the liver, $\frac{1}{10}$ of a grain triturated is administered every hour or half-hour until free evacuation occurs, or 1 grain is taken, then, if necessary, ounce doses of *liquor magnesii citratis* can be given until free action of the bowels is obtained. The drug is not a direct diuretic *per se*, but it may act indirectly to a slight extent simply by its general stimulating action upon the emunctories of the entire body, thus favoring secretion, excretion, and the elimination of intestinal ptomaines and systemic poisons, all of which act unfavorably upon the secretory and excretory organs when present. Seventeen cases of diarrhœa, due to the ingestion of improper food, were speedily cured by $\frac{1}{12}$ of a grain of triturated calomel and one-half this quantity of podophyllin every two hours. Nine cases of so-called bilious diarrhœa in adults responded rapidly to $\frac{1}{4}$-grain doses every four hours. Sixty-eight cases in children received a saline cathartic as preliminary treatment, then $\frac{1}{100}$ of a grain each of calomel and powdered ipecacuanha was given every one to four hours with "marvellous" results. Twenty-five cases of obstinate diarrhœa, which had been running some days before consultation, responded rapidly to a combination of $\frac{1}{10}$ of a grain of calomel and 1 grain each of lacto-peptine and zinc sulpho-carbolate given every two to four hours. Four cases of diarrhœa in typhoid fever were markedly benefited by the same combination. In the diarrhœa following excessive use of alcoholic liquors, excellent results were obtained from $\frac{1}{40}$ of a grain of calomel and $\frac{1}{100}$ of a grain of podophyllin every three or four hours. This clinical testimony is advanced to show the efficacy of calomel and its eliminative power as contrasted with the evil routine methods of using astringents and opium in the treatment of diarrhœas.—*Journal of the American Medical Association*, 1895, vol. xxiv. p. 836.

Creosote.

Dr. James K. Crook has made use of this remedy for the past six years. From it he finds two very gratifying results: 1. It possesses undoubted power to relieve the fetor of the expectoration in foul-smelling cases of bronchiectasis and phthisical cavities. 2. In small doses (1 to 2 minims thrice daily) it promotes the appetite and tends to stimulate the powers of digestion. Beyond this he has not found that it modifies in any appreciable manner the ordinary course of phthisis. In several cases where it was relied upon as an expectorant, other remedies of this nature having been withdrawn, the results were of a disappointing character, the only apparent effect being the odor which it imparted to the breath. He concludes that its use may with safety be limited to cases manifestly requiring a pulmonary disinfectant, and to those accompanied with a feeble appetite, flatulency, pyrosis, and other evidences of fermentative action in the stomach and intestines.—*The Post-Graduate*, 1895, No. 9, p. 340.

THE DANGERS OF STRYCHNINE IN SNAKE-BITE.

SURGEON R. K. ELLIOTT reports two instances where death followed the use of strychnine as the so-called Australian antidote (method of Dr. A. Mueller). In both instances the antidote seems to have hastened the death of the patients. In the second case there seemed to be no doubt but that it was one of snake-poisoning. The advocates of this method will have difficulty in claiming that the drug is harmless for those who are really bitten.—*Indian Medical Gazette*, 1895, No. 7, p. 259.

TUBERCULIN.

DR. CHARLES DENISON cites three instances in which Koch's tuberculin was used in tubercular affections which were not pulmonary—tubercular cystitis and tubercular hip-joint disease (two cases). From the improvement which has been noted in these cases he concludes that there is ample justification for its use in the positive, although sometimes necessarily more or less transitory, immunizing influence.—*New York Medical Journal*, 1895, No. 870, p. 129.

MEDICINE.

UNDER THE CHARGE OF

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MONARTICULAR RHEUMATISM.

L. HEIDENHAIN (*Deutsche med. Wochenschr.*, 1895, No. 31, p. 496) calls attention to cases of arthritis affecting a single joint, or occasionally two or three. This occurs in persons without general symptoms; apparently normal temperature (being policlinic cases temperatures were not taken); clean tongue and good appetite. The articular pain is usually only moderately severe, there is tenderness to pressure and on motion, occasionally œdematous swelling over the joint. Traumatism, gonorrhœa, tuberculosis, and syphilis could be excluded. After giving sodium salicylate the symptoms disappear rapidly and do not return. Occasionally, in protracted cases, limitation of motion follows. Out of fifty-one cases of rheumatism observed in the Greifswald Policlinic in three years, thirty-eight were of the kind described. In thirteen cases the shoulder was affected; the wrist, elbow, and ankle being affected less frequently; the carpal and tarsal and the small joints still more rarely. The chief element on which the diagnosis was based was the rapid subsidence of symptoms after the administration of salicylic acid. The author thinks that in such cases the origin of many obscure cases of endocarditis may be found, although murmurs were not heard in the cases reported.

SENILE EPILEPSY AND COMPRESSION OF THE CAROTID.

NAUNYN reports (*Zeitschrift für klin. Med.*, Bd. xxviii. p. 217) some observations bearing on the nature of so-called senile epilepsy. In three men, all above the age of sixty-three, with a history of epileptiform attacks, it was possible to bring on attacks precisely similar by compression of the carotids. Naunyn assumed, therefore, that the spontaneous attacks were due also to cerebral anæmia, which, on account of the weak heart and arterio-sclerosis existing in the patients, was not far to seek. Among other signs of anæmia of the brain, in the spontaneous attacks as far as they were observed, there was always a slow pulse; in one case an attack came on when the patient rose suddenly; in another case after a warm bath. Naunyn made experiments with carotid-compression in persons who had never had epileptiform attacks and who had no signs of brain disease or disturbance of the circulation. In persons not more than thirty years old compression of both carotids caused at most mild temporary dizziness. In two men over fifty, with arterio-sclerosis and slight disturbance of the circulation, but without brain symptoms, compression was followed in a few seconds by loss of consciousness, slow pulse, and mild general convulsions. Soon after these experiments were made compression in a case of senile epilepsy was followed by cessation of breathing, so that the subject was abandoned. So far as made, however, the observations seem to prove that senile epilepsy depends on circulatory disturbances due to disease of the heart or vessels. In two of Naunyn's cases bromides had no effect; in the third it seemed to increase the severity of the symptoms. The observations also show that compression of the carotids is of no value in the diagnosis of thrombosis of the basilar artery or of anomalies in the circle of Willis.

THE IMMUNIZING AND CURATIVE EFFECTS OF ANTITOXIC SERUM FROM SHEEP AND DOGS IN TYPHOID FEVER.

BEUMER and PEIPER have extended their investigations, begun in 1887, in immunity against typhoid fever (*Zeitschrift für klin. Med.*, Bd. xxviii. p. 328). They used 1 per cent. peptone-bouillon as a culture medium, and in it cultivated the most virulent typhoid bacilli obtainable. The cultures were killed by exposure to a temperature of from 55° to 60° C. for one hour. Longer exposure or higher temperature decreased the virulence of the culture very materially. (Early experiments had proved that the toxic substance exists in the bodies of the bacteria.) These sterilized cultures were inoculated into sheep at intervals of from three days to two weeks. The amount injected was increased gradually from 1 c.cm. to 100 c.cm. The animals were then bled to the amount of 500 c.cm., the serum treated with 0.5 per cent. solution of carbolic acid, and preserved in the cold and dark.

The serum of uninoculated sheep was found to be unfavorable for the growth of typhoid bacilli, but the antitoxic serum was much more highly so. The immunizing and curative qualities of the serum were tried on animals with most favorable results. The course of typhoid infection is so much more rapid in animals than in man that the results cannot be compared. From their own experiments, however, and from those of others, the authors think it certain that in the serum of animals treated with typhoid toxin immunizing and curative substance exist. The extent to which these facts can be applied to man must be determined by further experiments. The serum obtained from sheep has no dangerous effects when injected in healthy men.

[The curves given by the authors from cases treated in 1891 do not show that the action of the antitoxin serum is at all marked.]

F. Klemperer and Levy (*Berliner klinische Wochenschrift*, 1895, No. 28) have immunized dogs by injecting increasing doses of bouillon cultures of typhoid bacilli into the peritoneal cavity. Serum obtained from the dogs gave immunity to other animals and prevented death if injected after infection. Patients with typhoid fever treated with the serum had mild cases of fever.

The Cause of Death in Pneumonia.

Bollinger (*Münch. med. Wochenschrift*, 1895, No. 32) has endeavored to find a more reasonable explanation for the cause of death in croupous pneumonia than has hitherto been available. In investigating the subject he was struck by the large amount of exudate present in many cases. Thus, in fifty out of one hundred fatal cases of pneumonia there was, on the average, more than one kilo of exudate. In only ten cases was the amount less than 500 grammes, the weight of the exudate in the remaining forty cases lying between these two figures. In one case with red and gray hepatization limited to the right lower lobe, the exudate weighed 1300 grammes. The amount of exudate is not dependent alone on the extent of the local process, but is in inverse ratio to the general nutrition and the amount of blood in the body. So in the cachetic, old, and anæmic persons, hepatization is often incomplete—there is a "soft" pneumonia. Such cases in Bollinger's series often presented complications such as chronic nephritis (twenty-four times), cirrhosis of the liver (eight times), tuberculosis and arterio-sclerosis. Cases with slight exudate were twice as frequent as those with large ones in persons above the age of sixty. The effect of pneumonic consolidation on the amount of blood in the body can be realized by considering that whilst in health the lungs contain 7 to 9 per cent. of all the blood, in a severe case of pneumonia they contain from 30 to 40 per cent. The exudate, therefore, has almost the same effect as rapidly recurring hemorrhages associated with fever and infection, for it is composed almost entirely of blood constituents. Aside from the effects on the heart of the alteration of the blood, there are some other changes of considerable interest. Among them is the emaciation after defervescence; but the most remarkable is leucocytosis. Bollinger's explanation of this is that it represents an attempt at regeneration, and he thinks the enlargement of the spleen depends more on the regeneration of leucocytes than on infection. The conclusion then is that the critical symptoms of collapse and fatal cardiac insufficiency of pneumonia are essentially due to oligæmia. This leads to insufficient nourishment of the heart, which is at the same time weakened by fever and under unusual stress. Perhaps, too, anæmia of the brain may act injuriously on the heart, through the nervous system. According to what has been said, the author thinks that bleeding has properly been abandoned. In addition to the usual methods of maintaining strength saline injections would seem of value.

COLLECTIVE INVESTIGATION IN THE USE OF DIPHTHERIA-ANTITOXIN IN GERMANY.

THE *Deutische med. Wochenschrift* (1895, No. 32) publishes in tabular form the results of a collective investigation on diphtheria treated with and without antitoxic serum. One of the most interesting features of this is the low death-rate of both classes of cases, in marked contrast to some of the earlier reports based on comparatively small numbers. Thus, out of 562 cases treated with antitoxin in Berlin, 84 died, or 15.1 per cent.; whereas, out of 282 cases treated without serum in the same city, 49 died, or 17.4 per cent. Outside of Berlin, 5271 cases treated with serum gave a death-rate of 9 per cent.; and 4197 cases without serum, 14.4 per cent. The totals are respectively 5833 with serum, and 9.6 per cent. mortality; and 4479 without serum, and 14.7 per cent. mortality. The other details are not of much interest in themselves; a later report is promised.

CHANGES IN THE CEREBELLUM IN TABES DORSALIS.

JELLINEK (*Deutsche Zeitschrift für Nervenheilkunde*, Bd. vi. p. 231) has examined the cerebellum in six cases of tabes dorsalis. In all cases there was atrophy of the ganglion cells of the corpus dentatum, the cells being long, spindle-shaped or three-cornered instead of round or oval, as in the normal condition. The bloodvessels of the parts had disappeared to a great extent. The fibres penetrating the corpus dentatum, the finer fibres in the lobules of the hemispheres, and, in some cases, also the radiating fibres, were more or less degenerated.

BASEDOW'S DISEASE.

PÄSSLER (*Deutsche Zeitschrift für Nervenheilkunde*, Bd. vi. p. 21) has analyzed the histories of 58 patients in the Jena Policlinic who showed symptoms of Basedow's disease. Of these, 74 per cent. were women. Of 51 cases 29 had a neuropathic family history, in most cases on the mother's side. Rheumatism and valvular disease of the heart were each noted five times. In all cases but one there was tachycardia; in 43 palpitation of the heart; in 7 more other symptoms of circulatory disturbance. In 10 cases there was no goitre. Exophthalmus was present in 28 cases. The cardinal symptoms of rapid pulse, palpitation, goitre, exophthalmus, and tremor occurred together in only 35 per cent. of cases, one or more being absent in all the others. There was characteristic tremor in 90 per cent. of cases. Nervous irritability was present in 38 cases; restlessness in 19. Severe headache was complained of by 32 patients, dizziness by 23, insomnia by 21. Besides the 5 cases with valvular affections, 15 had dilatation of the heart; 24 patients complained of a sensation of warmth; 29 cases had increased perspiration; 5 others local hyperidrosis; a number of cases showed periods of emaciation, alternating with times in which there was rapid increase of weight; 17 cases had polydipsia; 4 of these had also polyuria. In 45 per cent. of cases there were severe attacks of diarrhœa, with or without colic. Vomiting attacks occurred in some cases. The irritable cough, first observed by Charcot, was noted in 10 cases; in nearly all cases the breathing was rapid. This the author ascribes to a mild paresis of the respiratory muscles. In 4 cases there were choreic motions, although "choreic tremor" was not observed; 24 cases showed weakness of the voluntary muscles; temporary loss of strength ("giving way of the legs") was observed in 10. The reflexes were usually normal; in 6 cases they were increased; decreased in only 2. There was ankle-clonus in 2 cases. In 1 case the reflexes were similar to those in spastic pseudo-paralysis. Graefe's symptom was noted only 9 times, and was observed by the author in 1 out of 200 healthy persons examined for the purpose. Stellwag's symptom was present 16 times on both sides; 4 times on one side. Möbius's symptom, insufficiency of convergence, was noted in 9 cases; in 1 there was marked paresis of the internal recti with double vision. The pupil-reflex was usually more active than normal. The eye-grounds were normal. In 11 cases the cervical lymphatics were swollen; in 3 cases the spleen was enlarged; 34 cases were anæmic; 4 cases had albuminuria.

GANGRENE OF THE LEG IN TYPHOID FEVER.

F. DE QUERVAIN (*Centralblatt für inn. Med.*, 1895, No. 33) reports the case of a man twenty-five years old, who, in the defervescence of a moderately severe attack of typhoid fever, had a rise of temperature with pain in the right leg. These soon proved to be the early symptoms of thrombosis of the right popliteal artery. A combination of dry and moist gangrene followed. Later there were symptoms of thrombosis of the left femoral vein. The right leg was amputated at the lower part of the femur; recovery followed without accident. The right popliteal artery and vein contained laminated, partly organized thrombi, extending far down into the branches of both vessels. Just below the joint was a deep abscess, containing thick, tenacious, grayish-red pus with a peculiar, sour odor. The pus contained motile bacilli of various sizes, which gave all the cultural characteristics of the typhoid bacillus, not staining by Gram's method. There were no cocci. The author thinks the bacilli set up an arteritis, and that the phlebitis and abscess were secondary.

SECOND ATTACK OF DIPHTHERIA.

The general opinion that diphtheria not rarely occurs more than once in the same individual has recently been opposed by the physicians of the Children's Hospital in Basel. STOCKER, of Lucern (*Correspondenz-Blatt für Schweizer Aerzte*, 1895, No. 15), cites the following to show that exceptional instances to the contrary do occur: A boy of fourteen years had diphtheria eight years before, with extensive exudate, followed by severe nephritis and paralysis of the velum. Two sisters, at the same time, had similar attacks and died of laryngeal stenosis. In September, 1894, the boy had an attack of diphtheria with exudate on both tonsils, half arches, and the uvula. There was albuminuria (0.15 per cent. albumin) lasting ten days. Two weeks from the onset the velum became paralyzed, and there was paralysis of accommodation in both eyes. Although the specific bacilli were not looked for the diagnosis of the author will no doubt be generally accepted. Less probable is his theory of the origin of the later attack, viz., in the setting free of germs left over from the former attack by repairs to the walls and floor of the house in which the patient lived.

Taches Bleuâties.

In a recent article on the above subject V. Y. Bowditch reviews the theories of the formation of these blue spots and records the result of observations on his own part. In nine cases under his own care he never failed to find the pediculus pubis, this confirming the original statement of Moursou that this parasite was always present.

The spots were found in a variety of diseases, not necessarily of a febrile character; they were seen most numerously in a fatal case of meningitis following an otitis media, and were seen also in typhoid, tuberculosis, gastro-duodenitis, acute bronchitis, intermittent fever, and hysteria.

Most of the theories brought forward have been published before, but a new one, apparently not widely known and held by Revilliod, of Geneva, is certainly unique.

Revilliod believes the spots to be due to the excrement of the pediculus, which he states is an insect of very cleanly habits, and that during the night he leaves his usual seat at the root of the hair and deposits his feces in the adjacent parts of the body! Bowditch is inclined to believe that Moursou's original statement of the relation between the pediculus and the taches bleuâties is undoubtedly correct. [With this accords our experience at the Johns Hopkins Hospital, mentioned by Hewetson.—*Bulletin*, vol. v.]—*Boston City Hospital Reports*, 1895.

Stokes-Adams Disease.

Fuchard states that this syndrome has been previously defined as "permanent slow pulse with attacks of syncope and epileptiform attacks;" he confines the term Stokes-Adams disease to the cases where the above symptoms are due to artero-sclerosis.

After a review of the subject and the recording of two new cases he comes to the following conclusions:

1. That under the name of "permanent slow pulse, with attacks of syncope, and epileptiform or apoplectiform seizures," there has been described a syndrome related to different morbid conditions, and that this erroneous nomenclature leads to grave errors in diagnosis, prognosis, and treatment.

2. That under the name of "Stokes-Adams disease" have been classed all the cases of cardio-bulbar artero-sclerosis, as well as those entirely different cases of permanent slow pulse of nervous origin.

3. That in the first case (Stokes-Adams disease) we find as associated symptoms uræmia, angina pectoris, Ménière's disease, etc., all due to arterosclerosis. In the second case (*i. e.*, slow pulse due to nervous diseases) all these accompaniments are wanting.

4. That the therapeutics of the two classes of cases are entirely different.

5. That "fruste" forms of Stokes-Adams disease exist (as cases without permanent slow pulse, etc.), and terminate frequently by sudden death.

6. That this disease is often associated with other diseases, as renal disease, coronary and myocardial disease, etc.

7. That Stokes-Adams disease is due to an intermittent weakness of the bulb and of the heart, and that the therapeutics should be aimed to attack the ischæmia of these organs.—*Archives Gênèrales de Médecine*, September, 1895.

VASOMOTOR ŒDEMA WITHOUT ALBUMINURIA.

TCHIRKAFF, in an interesting article, calls attention to a new syndrome, characterized by great œdema without appreciable organic disease. He has studied six cases between 1886 and 1894. The patients were all men of from twenty-five to sixty years of age, generally of a good constitution, though some of them slightly anæmic.

In the cases presenting anæmia the œdema developed slowly over a period of three to four months; in the plethoric subjects it developed much more rapidly.

The anæmic cases strongly resembled the picture presented by cases of chronic nephritis. In the non-anæmic cases there was a different picture, anasarca coming on rapidly in the space of a week or so, the peritoneal cavity filling with fluid, and in the course of the next two weeks the pleural and pericardial cavities also showing signs of exudate. The face, trunk, and extremities all became swollen at the same time.

At times only the upper extremities were œdematous, but usually the lower were most affected. In some cases the œdema affected mostly the neck, face, chest, and upper arms. Certain patients lost the hair from the eyebrows, beard, moustache, and pubes at the time that the œdema appeared; the hair of the head also became very thin and of a softer texture, and changed its color somewhat. The cases all ended in recovery.

Most careful examinations showed that there was no nephritis in these cases; the urine was repeatedly examined, and albumin was never present, showing that they were not cases of chronic nephritis with temporary absence of albumin; there were never, moreover, any signs of uræmia or kindred symptoms.

The blood was carefully examined in all cases, and no changes were found either in the number of corpuscles or the percentage of hæmoglobin; a large percentage of reduced hæmoglobin was, however, always present.

The heart was negative in all the cases, and there were no frank signs of hepatic cirrhosis.

The majority of the patients either showed signs of or gave a history of a preceding lues.

From the increase in the reduced hæmoglobin, and the fact that there were no signs of deficient oxygenation in the lungs, or venous stasis, Tchirkaff concludes that we must be dealing with a stasis in the venules and capillaries probably of vasomotor origin.

As the result of his observations he formulates the following conclusions:

1. There exists a form of disease but little known, characterized by general œdema, with effusion into the serous cavities, without albuminuria; at the same time the heart, lungs, liver, and other organs show no change capable of causing œdema from blood stasis.

2. These œdemas are of a vasomotor origin and can be called "general vasomotor œdemas."

3. They are characterized by, and often accompanied by, dilatation of the right heart and moderate artero-sclerosis.

4. They are always accompanied by changes in the blood, *i. e.*, the hæmoglobin is reduced in excess. Beyond this one occasionally sees trophic trouble and pronounced paralysis of the veins of the skin.

5. In most cases these œdemas are of syphilitic origin, and disappear under treatment by mercury and the iodides. It is possible that the œdema without albuminuria, from which the African soldiers suffer, does not always occur from cold or the formation of ptomaines from indigestion.—*Revue de Médecine*, August, 1895.

SURGERY.

UNDER THE CHARGE OF

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LAMINECTOMY FOR COMPLETE PARAPLEGIA PRODUCED BY ANGULAR CURVATURE OF THE SPINE.

GRAY details the following case (*British Medical Journal*, 1895, No. 1789): Boy, aged twelve years, six or seven months after a fall was observed to be growing crooked. A felt jacket had been worn for a time, but had to be abandoned on account of the discomfort produced by it. In July, 1893, there was complete paraplegia which was said to have developed gradually. Sensation was also lost in the legs. On examination a distinct postero-lateral curvature involving the fourth, fifth, and sixth dorsal vertebra was seen. The reflexes, both superficial and deep, were all present. The knee-jerk was exaggerated as was also ankle-clonus. There were no rectal or bladder symptoms.

As all active disease in the spine had subsided, it was decided to remove the arches of the vertebra involved, which was done April 4, 1894. At the end of six weeks a plaster-of-Paris jacket was applied, and the boy allowed to move about by the aid of crutches. On the 16th of November he was able to walk without any assistance whatever.

A CASE OF DOUBLE MASTOID DISEASE WITH SEPTIC THROMBOSIS OF THE LATERAL SINUS.

WALKER contributes the following (*British Medical Journal*, 1895, No. 1789): A woman, aged twenty-four years, was admitted to the Leeds Infirmary with well-marked symptoms of suppuration in the middle-ear, with extension into the mastoid cells on both sides. It was also evident that there was septic thrombosis of one lateral sinus, but beyond the fact of the falling in of the posterior wall of the right meatus there were no symptoms to indicate on which side the disease was more serious. After shaving the head the swelling on the left side was seen to be more pronounced, and the usual incision was made for opening the corresponding antrum. The antrum was carefully cleaned and inspected, but no perforation of the bone was discovered. The bone was next chiseled away over the lateral sinus, which was found at one point covered with pus. On incising the sinus a quantity of pus and broken-down clot were removed. The sinus was then cleaned out by the cautious use of a Volkmann's spoon until a sudden gush of blood showed that the channel was clear, it was then plugged with Horsley's antiseptic wax. The antrum of the opposite side was then opened and drained. Some days later an abscess developed on the back of the neck. After this the patient steadily improved, the optic neuritis almost disappeared; the hearing which had been *nil* in both ears had so much improved on the right side that loud conversation could be heard. The convergent strabismus had almost gone, but the paresis in the left arm and hand still remained.

A CASE OF AURAL PYÆMIA WITHOUT SINUS THROMBOSIS TREATED BY LIGATURE OF THE INTERNAL JUGULAR VEIN AND PLUGGING OF THE LATERAL SINUS.

DEANESLY records the following interesting case (*British Medical Journal*, 1895, No. 1789): A child, four years of age, developed double otorrhœa eleven days after an attack of scarlet fever. An abscess appeared over the left mastoid, which was incised. The child had the appearance of being very ill. Forty days after the beginning of the disease the patient had a sudden rigor with much lividity, the temperature rose to 103, and the patient vomited several times. These symptoms continued during the next three days, when the author decided to ligate the internal jugular vein on the left side just above the omohyoid muscle, in two places and divide between. The vein showed no sign of inflammation. The left mastoid antrum was next opened and the sigmoid sinus exposed. The sinus showed no evidence of inflammation, and bled profusely on being incised. The hemorrhage was arrested by pressure from a gauze tent. The child died from exhaustion thirteen days after operation. At the post-mortem examination it was found that thrombosis had not occurred, even after the moderate gauze pressure. At one point, in the left sigmoid sinus near the jugular vein, a soft yellow spot was noticed which had nearly perforated into the arachnoid space. There were apparently two small pyæmic infarcts in the lungs.

PUNCTURED FRACTURE OF THE SKULL; SYMPTOMS OF COMPRESSION FOR THIRTY-FOUR DAYS; OPERATION; RECOVERY.

TUBBY reports the following case in the *British Medical Journal*, 1895, No. 1789: The patient, aged forty-three years, was thrown from a horse, alighting on his head. He was able to walk home unaided, and at no time was there giddiness or unconsciousness. He was found to have sustained a lacerated wound over the right frontal eminence. The patient objected to any exploration of the wound, as he felt no serious inconvenience. As the condition did not improve, however, he decided to submit to an operation thirty-four days after the accident. At this time the pupils were widely dilated and reacted but poorly to light; pulse was 58, slow and full. The speech was deliberate and hesitating. The mind was clear and memory good. There was slight blurring of both optic disks. There was no paralysis anywhere. The wound was suppurating. Examination of the wound showed that a portion of the skull seven-eighths by half an inch had been depressed for more than half an inch below the surface. The dura was not wounded. The peculiar features of the case are the serious nature of the injury, although attended with such apparently slight symptoms, the depth to which the fragment of bone had been driven and the rapid relief afforded by its removal. The circulation in the superior longitudinal sinus must have been interfered with, but no ill effects seem to have followed.

THE CURABILITY OF CANCER WHEN THE LYMPH-NODES ARE INVOLVED.

CURTIS, in an article under this title in the *Medical Record*, vol. 47, No. 7, reports two cases in which there was distinct carcinomatous glandular involvement in which the patients have apparently been cured by removing all of the parts that appeared diseased. The author does not accept Heidenhain's advice to remove the pectoral fascia in cases of carcinoma of the breast and the entire muscle itself if the disease has penetrated into its fibres at any point. He does not think the few cases so far recorded in which this method has been followed have justified a continuation of the practice. The contribution is a plea for the rational treatment of malignant disease, and while not advocating undue conservatism, any unnecessary sacrifice of tissues is properly objected to.

THE TREATMENT OF INOPERABLE MALIGNANT TUMORS WITH THE TOXINS OF ERYSIPELAS AND BACILLUS PRODIGIOSUS.

COLEY, in a review of this subject in the *Medical Record*, New York, vol. 47, No. 3, summarizes his experience as follows:

Up to May 31, 1894, he had treated with mixed toxins twenty-five cases of inoperable sarcoma, eight of inoperable carcinoma, and three of sarcoma or carcinoma. In the cases of carcinoma he had had marked improvement in a number of cases, but no cures. The cases were all very advanced recurrent tumors. In sarcoma he stated that there were six cases in which he considered there was a reasonable hope of permanent cure. Six months have passed since then, and none of the six cases have shown any recurrence. Of two other cases, which were merely mentioned among the tabulated cases as improving, one has gone on to entire disappearance of the very large tumor and promises to be a cure, and the other, a six-times-recurrent sarcoma of hand, is in perfect health at present, nearly two years since the beginning of the treatment. Since May 31, 1894, he has treated twenty-four cases of malignant tumors, all inoperable and mostly recurrent, with the mixed toxins. Of these cases, thirteen were sarcoma and eleven carcinoma. In many of these cases of carcinoma the injections had an undoubted retarding influence, and in some of the cases the improvement was extraordinary, but in no case did the tumor entirely disappear. In the sarcoma cases the effect was far more marked; and, although in a number of the cases the disease was so far advanced that there could be no possible hope of recovery, still the powerful controlling influence of the toxins was demonstrated, and had the patient's general condition permitted a prolonged use of the injections, the result might have been otherwise.

In three of the thirteen cases the sarcomas have entirely disappeared; and, although no great length of time has elapsed, the results in his older cases make it improbable that relapse will occur. Of his total of thirty-eight cases of inoperable sarcoma, therefore, nine cases promise to be permanently successful.

TEMPORARY RESECTION OF THE NASAL BONES IN OPERATIONS ON THE FRONTAL, ETHMOIDAL, AND SPHENOIDAL SINUSES.

A new method of attacking the frontal ethmoidal and sphenoidal sinuses for the purpose of evacuating pus or removing new growths is reported by GUSSENBAUER (*Wien. klin. Woch.*, 1895, No. 21), who describes two successful operations, at least so far as immediate results are concerned, in two cases of malignant growths.

The method employed was devised with the view of giving ample room for the operation, and as far as possible freedom from the disfigurement the scar entailed. The operation was as follows: An incision was made, including the skin and periosteum, through the eyebrow along the supraorbital margin, passing down the side of the nose close to the inner angle of the eye, and uniting with a similar incision on the other side by a transverse incision over the bridge of the nose at the juncture of the osseous and cartilaginous portions. By the use of a sharp chisel the nasal bones were divided from their cartilage, and the nasal processes of the frontal bones were resected; the resection was then carried upward through the lachrymal bones and the portion of the frontal bone forming the superior part of the orbit; after the division of the ethmoid bone and the attachment of its perpendicular plate from the vomer, the bone with the attached superficial structures were turned back in one flap, laying bare the ethmoidal and frontal sinuses. There was very little bleeding, although the nares had been previously plugged on account of hemorrhage. The patient made a good recovery, the bone, which was replaced and sutured in position, uniting by first intention. The sinuses were packed with iodoform gauze, with drainage through the nares.

In a second operation the incision was carried down the median line of the nose instead of on either side. The nasal bones were separated from each other, resected, and turned back with the attached flaps on either side. Although there was as much room for operating, the operator prefers the first method, as he believes the scars are less noticeable, and the cosmetic effect is therefore better.

Is the Disinfection of Wounds Possible?

Haenel (*Deut. med. Woch.*, 1895, No. 8; *Cent. für Chir.*, 1895, No. 22) believes that the result of the following researches have proved or tend to prove that it is impossible to disinfect living tissues with chemical substances, and that the best means of producing recovery is to provide free drainage for the secretions of the wound, to keep the wound broad open, and absorb all the osmotic secretions in the dressing.

His experiments were conducted on forty-four guinea-pigs. The wounds entered the muscular tissues and were infected by tampons containing a virulent fluid, having in it both streptococci and staphylococci. The tampons remained in for times varying from four to eighteen hours. The wounds were then washed out and dressed with solutions of either 3 per cent. carbolic acid or 6 per cent. of sodium chloride, and were then dressed with tampons and moist gauze dressings soaked in the respective solutions. Six cases were dressed with aseptic dressings without tampons.

Under conditions as similar as possible no distinction could be made between the course of healing whether carbolic or sodium chloride had been employed in the solutions. If the virulence was marked the animals died of acute infection. If the course was chronic there was no distinction possible either in the intensity of the infection or duration of the recovery.

A Case Presenting Symptoms of Cerebral Tumor in which a Large Area of the Skull was Removed for Relief of Intracranial Pressure.

Clark and Morton report the following case in the *British Medical Journal*, 1895, No. 1789: An iron moulder, aged thirty-eight years, was admitted to the hospital on account of very severe headache and fits which he attributed to injuries of the head received when a boy, and to the shock caused by the death of a sister two years previously. The patient's memory had been gradually deteriorating, and his mental capacity had decreased. There was moderate double-optic neuritis, but no hemorrhages. Potassium iodide, pushed to 40 grains three times a day, and antipyrine for the pain seemed to give considerable improvement for a short time. Although the classical symptoms of cerebral tumor were present, there were no definite localizing ones, hence an operation was undertaken to relieve the symptoms by reduction of the intracranial pressure. A circle of bone with a diameter of two and one-half inches was removed from the region of the parietal eminence and portions of skull immediately below and behind it. The dura bulged forcibly through the opening thus made. A small drainage-tube was inserted and the flap of scalp sutured. The second night the patient was more comfortable than he had been for a long time. Ten days after the operation the wound was healed and the patient was going about the ward. The headaches had entirely gone and he thought the sight better. The improvement mentioned lasted but a short time as far as the fits were concerned, although he had been free from headache during all of this period.

The Regression of Certain Goitres after Exposure of the Hypertrophied Thyroid Body to Air.

The *New York Medical Journal*, vol. lxi., No. viii., contains the following translation of an article on this subject by Bérard in the *Province Médicale:* A young man had an enormous two-lobed goitre which had existed for years, dyspnœa had been complained of for several months, the eyes were slightly brilliant, but there was no exophthalmos, no palpitation or tachycardia and no tremor, but the voice was goitrous. There was some puffiness of the face, and anemia was marked.

The patient was put under ether and a median longitudinal incision through all the soft parts as far as the capsule of the thyroid was made. The capsule was next incised, and an effort made to enucleate the gland. Every attempt, however, was attended with so much dyspnœa that the effort had to be abandoned. The wound was dressed without closing. At the end of forty-eight hours several clamps were removed, and the dressing which had become saturated with serum was changed. There was no longer any functional inconvenience from the growth. Two months after the operation the circumference of the neck had decreased nine centimetres. The wound had almost completely cicatrized, and the ugly shape of the neck was so very much modified that no trace of the deformity could be seen unless the shirt collar was very much open. The normal tone of the voice had returned, and the patient could walk rapidly and even run without inducing dyspnœa. Bérard claims for this method the following advantages: Absolute harmlessness, complete absence of hemorrhage, preservation of the connection of the thyroid body with the trachea, and, finally, the possibility of effecting without the aid of general anæsthesia simple insensibility of the superficial surface with methyl chloride or with cocaine.

Intestinal Incision and Drainage in Acute Peritonitis.

For the intestinal distention, which is frequently observed in grave cases of general peritonitis, Mixter recommends (*Boston Medical and Surgical Journal*, 1895, No. 9) cœliotomy and incision of the intestine. In these cases the great distention causes paralysis of the intestine which usually leads to a fatal result. In such cases the author believes it is safe to open the coils of intestine at as many points as may be necessary to thoroughly drain them. He recommends that they be drawn out of the wound, held over a basin, incised in from one to four places and thoroughly emptied, after which they should be quickly washed off with hot saline solution, sewed up and returned, and the abdominal incision closed. The author has used this method in nearly twenty cases, some of which recovered, and in those that died the wounds were found to be tight. From the experience just recorded Mixter feels certain that by means of this operation we may save certain patients that otherwise would surely die. In some cases, particularly in those that have had an abdominal incision on the right side, the author secures permanent drainage by introducing a tube into the most prominent part of the cæcum and retaining it as long as necessary. Through this tube salts and stimulants may be introduced if the stomach is not retentive.

THE TREATMENT OF SPRAINED ANKLE.

GIBNEY contributes to the *New York Medical Journal*, vol. lxi., No. 7, a method of treatment that he says involves no loss of time, requires no crutches, and is not attended with any ultimate impairment of function. The method is as follows: A number of strips of rubber adhesive plaster of twelve inches in length and appropriate width are prepared. For a sprain about the external malleolus the first strip is applied, beginning at the outer border of the foot near the little toe and ending on the inner side of the foot about its middle just under the planter arch. The second strip is applied vertically, and passes from about the junction of the middle with the lower third of the leg, down along the side the tendo-Achillis, over the heel, and terminating at a point just above the internal malleolus, but posterior to it. The remaining strips are applied in the same way, each one overlapping the last about one-half of its width, until the whole external malleolus and side of the foot up to the middle third of the leg are covered. It is well to reinforce just under the malleolus by strips passing criss-cross so as to give additional support to the injured part. Care should be taken not to completely encircle the ankle, which might cause injurious compression. For sprains of the tarsal or mid-tarsal joints or other parts the adhesive plaster is to be applied in the same manner, the idea being to give support to the part.

THE FINAL RESULTS OBTAINED IN THE RADICAL TREATMENT OF HYDROCELE BY THE INJECTION OF IODINE.

SPALINGER (*Beiträge für klin. Chir.*, Bd. xiii., Heft S.; *Cent. für Chir.*, 1895, No. 27) in studying the radical cure of hydrocele compares the operative method since the antiseptic era with the results obtained by the injection of iodine.

In the 70 cases treated in the Zurich clinic, 48 were treated by the injection of iodine, 30 were cured, in 5 there were relapses, and 13 were not heard from. The average time in the hospital was fourteen to fifteen days. In 17 operations by incision there were 12 cases cured; no relapses, though 5 cases were not heard from. The average stay in the hospital was from thirty-eight to forty-two days.

The author believes that operation should be employed which is least dangerous, which produces the least functional derangement, and is followed by the most rapid cure. The iodine injection, although there is greater chance of relapse, the author believes is the better operation in ordinary cases; in resistant cases with complications the cutting operation should be employed.

THE QUESTION OF STITCH ABSCESSES.

LAUENSTEIN (*Beilage zum Cent. für Chir.*, 1895, No. 27) discussed before the German Surgical Congress the cause of the stitch abscesses observed in patients after aseptic operations. He made 216 observations on different suture and ligature materials in regard to their bacteriological relations. Among these bacteria capable of development in so-called sterilized catgut were found 35 times. In 149 samples, 107 were sterilized by dry heat; but 29 were afterward found to contain bacteria capable of development. The bacillis subtilis occurred most frequently, although the micrococcus tetragenus and the staphylococcus albus were also found.

The author summarizes his observations as follows:

1. Clinical observation shows that there are cases of wound-infection which have their origin in the catgut used in the operation.

2. It cannot be definitely settled in any case that the catgut was the source of infection.

3. But it can be said that the so-called sterilized catgut sold in shops contains bacteria capable of development and growth.

4. So long as this catgut is found to contain bacteria, it cannot be free from the suspicion of being the source of infection in wounds.

In the discussion that followed, Kocher, of Bern, said that since 1888 he has employed silk only, and that in his goitre operations before that time he had only 35 per cent. of absolutely primary healings, while since then he has had 85 per cent. Kocher believes that the suture material should be not only aseptic, but also antiseptic.

The past winter he has placed his silk in a watery solution of arsenious acid, and as a result in 35 cases has had absolute primary union.

THE TREATMENT OF INTESTINAL INVAGINATION.

RYDYGIER (*Beilage zum Centralbl. für Chir.*, 1895, No. 27) basing his conclusions on the study of 84 new cases from reliable sources, summarizes his study as follows:

In acute intestinal invagination:

1. Operation should be resorted to as early as possible after non-operative methods have been thoroughly tried without success. 2. After a laparotomy disinvagination is of value when it can be accomplished without any great difficulty. If the intestinal wall is suspicious looking at the point of invagination, the peritoneal cavity should be walled off with iodoform gauze, or the particular portion of the intestine should be drawn outside of the abdominal wall. 3. When disinvagination is impossible the resection of the invagination is the least dangerous procedure. 4. The resection of the entire invagination should be performed when the invaginating sheath is so markedly altered that there is danger of perforation. 5. The formation of an anus præternaturalis or an entero-anastomosis have usually no place in these cases; only in the presence of collapse is the formation of an artificial anus permissable.

In chronic invagination internal medication and non-operative methods must be employed, but should be abandoned after a week's trial. Disinvagination is of little avail, although four successful cases have been reported—one at nine months, two at six months, and one at ten weeks. Resection of the invagination is here also the operative method of choice. Entero-anastomosis should only be undertaken in the presence of adhesions. An artificial anus should not be thought of in the treatment of chronic invagination.

Early Motion in Fractures, Especially of the Lower Extremity.

V. Bardeleben (*Beilage zum Centralbl. für Chir.*, 1895, No. 27) gives the results of his treatment of fractures by the use of bandages, permitting the patient to walk about in all cases in which the condition did not demand an amputation, and in which the extremes of age did not make it dangerous. In the past year he has treated 58 cases: 17 fractures of the thigh, 39 fractures of the leg, and 2 patellar fractures, making a total of 181 fractures in which this method has been employed by him. In no case were the results defective. The advantages of the method, both for the limb and for the general health of the patient, were very great. Joints that were not directly involved could be easily moved after the bandages were removed. Muscular atrophy, delirium, and senile catarrh were never present. The time required for healing was shorter than usual.

OBSTETRICS.

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Three Cases of Sclerema Neonatorum.

In the *Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxii Heft 2, Schmidt reports three cases of this rare fœtal malady from the clinic of Erlangen. In all three careful microscopic study was made of the tissues, and bacteriological investigations were also carried out. In each of the children the characteristic tenseness and swelling of the skin were observed, especially noticeable upon the lower extremities and upon the back, and also present upon the upper extremities. The skin upon the chest was free, while little evidence of disease was present in the face. Each patient had a subnormal temperature which resisted warm baths and artificial heat. The limbs could be moved with difficulty, while the children could not be nourished. Post-mortem examination disclosed imperfect expansion of the lungs and multiple hemorrhages in the lungs and heart. One of the cases was noticeable for the large amount of adipose tissue which had developed; in this patient œdema was not well marked.

In the blood of all three children bacteria were isolated. The capillary-vessels were crowded with round bacteria, which were also found free in the connective tissue. These germs were also present in the parenchyma of the lungs and in the subcutaneous fibrous tissues. When cultures were made in one case, the bacillus proteus was present, and also the bacillus of liquefaction. It is evident that room exists for further study of the germs present in these cases.

It is probable that this disease may properly be considered an infection. In the cases described it was impossible to recognize the point of entry of the infective germs. There was no sign of inflammation about the umbilicus.

So far as the health of the parents might have influenced the children, two of the children were of the same parentage. The mother had already had seven healthy children, and after the birth of those in question she had two others who manifested no deformity.

Modified Milk.

In the *Boston Medical and Surgical Journal*, 1895, No. 12, vol. 133, **Worcester** describes work done in Dresden for the purpose of rendering cow's milk as nearly as possible an equivalent for mother's milk. The plan followed is based upon the belief that cow's milk is poor in lactalbumin. White of egg is taken as most closely resembling lactalbumin and being easy to obtain. The white of one egg is added to one pint of cow's milk and one and one-half pints of water. To secure the necessary fat, the milk should contain 9½ per cent. of fat, while sugar is added in the form of 13 drachms of milk-sugar. Under strict precautions for asepsis the white of egg is thoroughly beaten with the milk-sugar, and the pint and a half of water slowly added, stirring constantly. This emulsion is then strained through fine linen into sterilized milk. The whole should be slightly stirred or shaken, and poured into a nursing-bottle. If strict cleanliness has been observed, this mixture may be kept for days or even months.

A New Method of Measuring the Outlet of the Pelvis.

Klien describes in the *Monatsschrift für Geburtshülfe und Gynäkologie*, 1895, Band ii Heft 3, a new method of measuring the dimensions of the pelvis at its outlet which he has successfully employed in the clinic at Munich. The best method of making the measurements hitherto known is that of **Breisky**: it consists in measuring externally the distance between the tuberosities of the ischia, and also in taking the distance from the junction of the sacrum and coccyx to the lower border of the *ligamentum arcuatum.* While this method is fairly accurate and successful, it does not give all the information desired.

With a view of increasing the accuracy of the measurements Klien has devised an instrument composed of a cross-bar terminating in two disks, which are placed upon the tuberosities of the ischia. To the middle of this bar is joined what is essentially a pair of compasses, having a graded scale fastened across them. With the patient lying upon her back the two disks are pressed firmly upon the skin opposite the tuberosities of the ischia, while the attached calipers or compasses are used to outline a rhomboidal shape, extending from the subpubic ligament to the point of the coccyx. The result is a rhomboidal outline, the various dimensions of which can be computed by the formulæ applicable to a rhomboidal figure.

Klien utilized this instrument to advantage in measuring the pelvis of a woman who had fallen in childhood, breaking her leg and dislocating her hip. As the patient grew to womanhood, the result of this injury was an obliquely contracted pelvis. It was possible by Klien's method to measure accurately the outlet of this pelvis in the manner described.

THE BACTERIOLOGY OF THE BIRTH-CANAL.

In the *Centralblatt für Gynäkologie*, 1895, No. 38, STROGANOFF describes a series of investigations carried on in the clinic of Ott at St. Petersburg. By a method of aspiration he was enabled to obtain the secretions of the cervix uteri without contamination. Cultures were then made from these secretions and also from those of the vagina. His conclusions are that in the pregnant or non-pregnant the cervical canal is, as a rule, sterile. The region of the external os marks the boundary between the presence or absence of bacteria. In all his cases examined it was observed that the mucous secretion of the cervix destroys the life of micro-organisms.

CONTRACTED PELVIS; DELIVERY AT TERM OF LIVING CHILD BY THE EMPLOYMENT OF THE OBSTETRIC LEVER.

WASSILIEFF (*Archives de Tocologie*, 1895, No. 9) reports the case of a patient aged thirty-eight years, pregnant for the third time, and having a contracted pelvis whose antero-posterior diameter was between 8½ and 9 cms. As labor proceeded, rotation of the fœtal head failed, and the physcian in attendance attempted to apply the forceps; he could, however, insert but one blade, but rotation was so much improved by the introduction of but a portion of the instrument that the blade was allowed to remain, the turning of the head being facilitated by occasional pressure with the lever. The writer calls attention to the assistance derived in this way, and urges the use of the forceps-blade in the manner described.

TUBAL GESTATION OF TWO MONTHS FOLLOWED BY RUPTURE; THE FORMATION OF HÆMATOCELE AND PENETRATION OF THE BLADDER.

SCHWARZ describes in the *Centralblatt für Gynäkologie*, 1895, No. 37, the remarkable case of a patient who, when two months pregnant, was taken with severe collapse. A tumor formed at the left of the uterus, and the patient gradually rallied from her collapsed condition. Two weeks after this she began to pass clots of blood and pieces of membrane from the bladder. In four weeks the tumor at the side of the uterus could not be felt, while in seven weeks the patient was convalescent, and the uterus had undergone involution.

Embryotomy in Neglected Transverse Presentations.

Mermann (*Centralblatt für Gynäkologie*, 1895, No. 36) has succeeded in performing evisceration, in cases where the fœtus was impacted in transverse presentation, by cutting through the ribs with long scissors, and emptying the chest and abdomen with the hand. The extraction of the child is usually easy after this has been accomplished.

Puerperal Tetanus Treated by Tizzoni's Antitoxin.

In the *Deut. med. Woch.*, 1895, No. 36, Walko describes a case of puerperal tetanus treated by antitoxin in von Jaksch's clinic at Prague. The treatment was unsuccessful, the patient receiving in all eighteen injections, comprising $3\frac{6}{10}$ grammes. Well-marked leukocytosis developed after the second injection. As has been shown by Kittasato, tetanus bacilli could not be recognized. The clinical picture, however, of tetanus was a perfect one.

The Treatment of Tubal Gestation by Extirpation Per Vaginam.

In the *Annales de Gynécologie*, 1895, vol. xliv., Condamin, of Lyons, describes five cases of tubal gestation treated by extirpation *per vaginam.* His method of operating was essentially that of Laroyenne, and consists in puncturing the sac and removing its contents, followed by the removal of the diseased tube and ovary. This is done by vaginal incision, followed by the insertion of an aseptic sponge to check bleeding, which is afterward replaced by a tampon of gauze. The results in the cases described were good.

The Anatomy of the Pubic Joint.

Queirel, of Marseilles, in the *Annales de Gynécologie*, 1895, vol. xliv., has examined 200 women to determine the question as to whether the pubic joint is in the median line of the pelvis or whether it is often to one side. This investigation was undertaken because, in performing symphysiotomy, operators have failed to find the joint, and have in some instances cut through bony tissue, asserting that the joint was ossified. Of these 200 women 135 had borne children, 65 had not. Their ages ranged from twenty to eighty-nine years. He found between the ages of thirty-one and forty in 39 women examined that the joint was four times upon the left of the median line and in 5 patients upon the right. In 50 women whose ages varied between twenty-one and thirty, in 7 there was a deviation to the left, in 6 to the right.

At other ages deviation was found is less frequency. In all, in the 200, in 20 per cent. the joint was not in the median line. An examination of the records of large numbers of symphysiotomies shows that the pubic joint is very rarely ossified.

Pregnancy and Labor Complicated by Ovarian Tumors.

In the *Monatsschrift für Geburtshülfe und Gynäkologie*, 1895, Band ii. Heft 3, **Rubeska**, of Prague, contributes an interesting paper upon this subject. He urges the importance of removing an ovarian tumor in a pregnant patient as soon as a diagnosis of its presence is made. Prompt action is especially imperative when the tumor is such as to prevent the normal progress of pregnancy. Rubeska describes the case of a patient in her third pregnancy who had an ovarian tumor. The uterus and vagina were pushed downward and the size of the tumor was such that pregnancy at five months could not proceed further. It was impossible to replace the uterus in a favorable position. Although the tumor was found to be adherent, it was successfully removed. Twenty-four days afterward the patient was spontaneously delivered.

He also removed a dermoid as large as an orange with a successful result. In this case the uterus could be pushed up above the tumor, but the latter occupied such a position that it would have impeded the delivery of the child.

A serious complication of pregnancy is found in an ovarian tumor firmly fixed by adhesions in Douglas's cul-de-sac. In such a case the writer had two courses of action from which to choose—one to remove the tumor, the other to wait until term and perform Cæsarean section. The former was chosen, and although the omentum was extensively adherent the tumor was removed. It was necessary to raise the uterus out of the pelvis and to pass a gauze drain into the vagina and replace the uterus. Thirty days after the operation the patient was delivered in spontaneous labor. Two months after the operation the patient returned with the development of a cancer in the pelvis. This diagnosis was confirmed by autopsy.

In cases where an ovarian tumor is wedged into the pelvis during labor it may be necessary to push it up, under anæsthesia, and complete the labor if possible. The writer describes a case of this sort in which the patient was brought into the hospital in labor. She afterward returned and the tumor was removed. It was found to be a dermoid, the patient subsequently perishing from the development of malignant disease of the broad ligament. Rubeska's paper emphasizes the belief held by the majority of operating obstetricians that ovarian tumors should be removed during pregnancy.

The Treatment of Abortion.

Jacub, in a recent paper before the Obstetrical Society of Moscow (*Monatsschrift für Geburtshülfe und Gynäkologie*, 1895, Band ii. Heft 3), advised that threatened abortion be treated by absolute rest, with opium or *viburnum prunifolium*. Where hemorrhage occurs without dilatation of the os and cervix the antiseptic tampon is indicated. When hemorrhage is present and a finger can be inserted the uterus should be emptied by the finger, accompanied by antiseptic irrigation. If hemorrhage is considerable and only partial dilatation is present, the finger is the safest instrument to complete dilatation. In many cases, if the patient be kept clean, the membranes and placenta will be expelled without interference and without injury. In all cases ergot should be used in daily doses during the first week. The use of the sharp curette is not encouraged. Vaginal douches after abortion should be given for positive indications only.

Jacub calls attention to the fact that to the finger the placenta feels exactly like the endometrium, and that it is quite possible for the physician to imagine that the uterus is empty when the placenta is completely adherent. He describes two cases in which the attending physician had examined the uterus by his finger at the time of abortion, and supposed that the placenta had been removed. In both cases it was expelled several days afterward.

Two Cases of Fœtal Death During the Last Months of Pregnancy from Direct Violence.

Westphalen reports from the Obstetric Clinic of Kiel (*Monatsschrift für Geburtshülfe und Gynäkologie*, 1895, Band ii. Heft 3) the case of a patient in the latter months of pregnancy who fell upon the street and struck her abdomen against a door-step. She had severe pain for several days, followed by the cessation of fœtal movements. In two weeks afterward she was delivered of a dead child. When the placenta was expelled numerous clots came with it. On examination it was found that the umbilical vein had been ruptured and that the child had perished from hemorrhage following the accident. The cord was a short one, which undoubtedly favored the rupture.

His second case was that of a patient in the latter weeks of her sixth pregnancy who struck her abdomen against a bench while washing at a tub. Pain and cessation of fœtal movements followed. Hemorrhage gradually came on, terminated by the birth of a dead child. On examination the placenta had been loosened and the child had perished from hemorrhage.

Cæsarean Section in Uterus Didelphys.

In the *Archiv für Gynäkologie*, 1895, Band xlix. Heft 3, **Tschudy** reports the case of a patient in the clinic at Zurich who was brought to the hospital in labor. An examination under chloroform revealed a completely developed uterus into which the finger could be inserted, and which was found to be empty. At one side of the vagina there was a depression in the mucous membrane, which apparently marked the entrance of a second ill-developed uterus which contained the child. As the child was living, Cæsarean section was performed by Porro's method. The patient made a good recovery. Upon examination afterward the normal uterus was found in good position, while a small stump was left from the partially developed womb. The writer calls attention to a second case in which the same abnormality existed, accompanied by the presence of a vaginal septum which prevented the escape of the menstrual discharge. In this patient it was necessary to excise the septum to procure relief.

The Disinfection of the Hands.

Reinicke contributes an article upon this subject to the *Archiv für Gynäkologie*, 1895, Band xlix. Heft 3. He concludes from an elaborate series of experiments that the hands should first be cleansed with hot water and soap, and brushed for five minutes; then brushed from three to five minutes in 90 per cent. alcohol, and afterward in an aseptic fluid. The quickest method of disinfecting the hands consists in brushing them vigorously in alcohol for five minutes.

PREGNANCY COMPLICATED BY A LARGE VESICAL CALCULUS.

ROSENFELD, of Nurenberg, described before the Obstetrical Society of that city (*Münchener med. Woch.*, 1895, No. 39) the case of a woman, aged twenty-seven years, brought to the clinic suffering from severe pain in the bladder, with retention of urine. She was four months pregnant. On examination a large vesical calculus was found preventing the escape of urine and complicating pregnancy. The patient was operated upon on the following day by transverse incision after Trendelenburg's method. It was impossible to distend the bladder with boric acid solution. Sutures were introduced into the bladder wall and the bladder drawn upward as far as possible and opened. The stone was so large that the incision was prolonged to the neck of the bladder. Hemorrhage was checked by a tampon. The stone was finally removed and with it a quantity of purulent urine. The bladder was cleansed and stitched to the abdominal wall and tamponed with iodoform gauze, and a drainage-tube inserted. Abortion occurred forty hours after the operation. The patient perished of pneumonia and heart-failure a few days after the operation. Peritonitis was absent. Hydronephrosis and purulent nephritis of both kidneys existed. The ureters were dilated.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,

OF NEW YORK.

RAPID DILATATION OF THE UNIMPREGNATED UTERUS.

BRAITHWAITE (*British Medical Journal*, June 29, 1895) recommends the use of Hegar's dilators under anæsthesia on the last day of the menstrual period, immediately after the cessation of the discharge, when the tissues are soft and elastic. The advantages claimed for this method are the avoidance of inflammation and sepsis, of which there is considerable risk when tents are used and the rapidity with which dilatation can be effected; there is less danger of injuring the tissues, he claims, as they stretch more easily than at other times and the dilatation is more permanent.

EARLY DIAGNOSIS OF CANCER OF THE CERVIX.

SINCLAIR (*Medical Chronicle*, 1895, No. 5) calls attention to the importance of the early recognition of cancer of the cervix uteri, and the unsatisfactory result of many microscopical examinations of bits of excised tissue. The want of a clinical sign which can be recognized by the general practitioner has long been felt. The writer believes that such a sign is offered by the greater friability of the tissues in malignant disease. If the suspected area is exposed through a speculum and is scraped with a sharp spoon, it will simply bleed if non-malignant, but if cancerous, the soft, cheesy nature of the diseased tissue will be readily recognized.

A More Radical Method of Performing Hysterectomy for Cancer of the Uterus.

Clark (*Johns Hopkins Hospital Bulletin*, July–August, 1895), making a practical application of catheterization of the ureters, has suggested a method of extirpating a considerable proportion of the broad ligaments with the cancerous uterus. His technique is as follows: Bougies are inserted into the ureters under cocaine-anæsthesia. The patient is then etherized, a free abdominal incision is made, and the upper portions of the broad ligaments, with the ovarian ligaments, are tied. The bladder is then separated and the uterine arteries exposed and dissected out an inch beyond the vaginal branches, where they are ligated. The ureters are dissected free, when the remainder of the broad ligament is tied close to the iliac vessels and divided at its pelvic attachment, the dissection being carried well below the cancerous area. The vagina is then perforated with scissors and is tied in segments and divided. A strip of gauze is passed down into the vagina and the peritoneal flaps are sutured over the raw surface. Finally the pelvic cavity is irrigated and the abdomen closed without drainage.

Ligation of the Uterine Arteries for Uterine Fibroids.

Kuhn (*Nordiskt med. Arkiv*, August, 1895) reviews the history of the operation as suggested by Gottschalk, and mentions the results of Martin, Büstner, and Fritsch. Sixteen cases are reported from the Copenhagen clinic. In six operations by Howitz only one was successful, on account of the youth of the patients and the size of the tumors.

The Technique of Vagino-fixation of the Uterus.

Wertheim (*Centralblatt für Gynäkologie*, 1895, No. 18) reports thirty-seven operations, grouped as follows: Seven cases in which Mackenrodt's original technique was adopted, all of which were unsuccessful; nine by Dührssen's original method, with three failures; sixteen in which the vesico-uterine pouch was opened (vaginal cœliotomy), all successful; and five according to Mackenrodt's more recent method with no failures, though the intestine was punctured in one instance.

Assuming that the object of the procedure is the permanent fixation of the fundus uteri, he infers from his personal experience that the peritoneal cavity should be opened in every instance, as only in this way is the operation rendered absolutely safe. The causes of failure as maintained by Dührssen—perimetritis, metritis, and hypertrophy of the portio, the giving way of catgut sutures, and subsequent pregnancy—were noted in three of the writer's cases. The criticism that the uterus is fixed in extreme anversion does not hold, he thinks, as the organ eventually regains its normal mobility. Vesical disturbance, especially from buried sutures, are avoided by using catgut for peritoneal fixation. In general, intra-peritoneal vaginal fixation is to be regarded as a substitute for ventro-fixation only in those cases in which the adhesions are not so firm as to prevent their separation through the vaginal incision and perfect replacement of the organ.

ICHTHYOL IN ANAL FISSURE.

V. d. WILLIGEN (*Nederl. tijdsche v. Geneeskunde; Centralblatt für Gynäkologie,* 1895, No. 18) reports several cases of anal fissure which were treated with pure ichthyol applied with a brush twice daily, and also after each defecation. The cure was rapid in every instance. The same treatment is recommended in the case of fissures of the vulva and vagina.

HYSTERECTOMY WITH THE CAUTERY.

MACKENRODT (*Centralblatt für Gynäkologie,* 1895, No. 18) presented at a meeting of the Berlin Obstetrical Society a cancerous uterus which he had removed through the abdominal incision with the Paquelin cautery, no ligatures having been used. The case was practically an inoperable one, but the operation was not difficult, and it was possible to remove more of the disease in the broad ligaments than if clamps or ligatures had been applied.

[The use of the cautery in total extirpation, though a new departure abroad, has been demonstrated by Dr. John Bryne, of Brooklyn, who has performed several successful hysterectomies in this way.—H. C. C.]

IGNI-EXTIRPATION OF THE UTERUS FOR CARCINOMA.

Under this term MACKENRODT (*Centralblatt für Gynäkologie,* 1895, No. 24) refers to the removal of the uterus in vaginal extirpation by the cautery alone, without the use of permanent clamps or ligatures. The idea first occurred to him in connection with the prevention of primary infection during operations for malignant disease of the cervix uteri. He began by separating the cervix with the cautery, then divided the stumps in this way after previous ligation or clamping. But this did not fulfil the object, *i. e.,* to cauterize the *entire* raw surface. He accordingly determined to rely on the cautery alone for the closure of the ends of the ovarian and uterine arteries. He has performed four vaginal and two vagino-abdominal hysterectomies according to the following method: After thorough cleansing of the vagina the cancerous tissue is removed with the sharp spoon, the raw surface cauterized, and the vagina is again disinfected with soap and water, alcohol, and sublimate solution. If the introitus is narrow more room is gained by deep lateral incisions, made with the Paquelin at a white heat. The uterus is then drawn downward with a volsella, and Douglas's pouch is opened with the cautery. Then the lateral, and finally the anterior vaginal, fornices are divided in the same manner. The anterior vaginal wall is pushed upward with the thumb of the left hand, so as to put the attachments between the uterus and bladder on the stretch, which are divided by light touches with the Paquelin. The lower portion of each broad ligament is now included in a special form of clamp, and is burned through on the uterine side; after thoroughly charring the stump the forceps are removed, care being taken not to disturb the eschars. Any bleeding point is seized with forceps and again touched with the cautery. The uterus is now drawn downward still more, and the separation of the bladder and vesico-uterine fold of peritoneum is completed with the cautery. Under the guidance of the fingers the upper portions of the broad ligaments are grasped in turn with the temporary clamps, and are separated as before, the intestines being meanwhile protected with gauze. Great care is necessary in cauterizing the stumps containing the ovarian arteries, and sometimes it may seem advisable to apply ligatures, although the writer has been obliged to do this in only one instance. The wound is dressed in the usual manner. When there are secondary deposits in the upper portions of the broad ligaments, the writer secures the uterine arteries from below, and when it is evident that firm adhesions are present he opens the abdomen and completes the operation from above. The four cases of vaginal hysterectomy presented no difficulties whatever, and were all successful. One death followed the two combined operations, the patient succumbing on the eighth day from exhaustion due to previous hemorrhages. The operations all having been performed since February of this year, sufficient time has not elapsed to allow a comparison between this and the usual method as regards freedom from recurrence. The fact that the vessels could be thoroughly secured by cauterization was fully demonstrated, and the advantage of this method over the use of clamps was shown by the absence of pain and other disturbances which so often accompany the application of the latter.

THE AVOIDANCE OF INFECTION IN HYSTERECTOMY WITH THE THERMO-CAUTERY.

ROSNER (*Centralblatt für Gynäkologie*, 1895, No. 21) calls attention to the well-established fact that direct infection of healthy wounds can occur during the removal of malignant growths, especially in vaginal extirpation of the uterus for carcinoma of the cervix, which cannot be prevented by either previous cauterization of the diseased surface or by constant irrigation during the operation. He recommends the entire removal of the uterus with the thermo-cautery (thermo-cauterectomy), and reports four successful cases. The technique is as follows: The uterus being drawn forcibly downward, the diseased surface is thoroughly cauterized; then the cervix is freed and the bladder dissected off with the fingers. Douglas's pouch is opened with the cautery, the bladder is held upward, the uterine arteries clamped, and the lower portion of the broad ligaments are burned through. The diseased cervix is now amputated as high as possible with the cautery, the remainder of the organ is drawn downward, the upper portions of the broad ligaments clamped and separated as before, and the uterus and adnexa are removed. The stumps are covered with iodoform powder, and the usual gauze dressing is applied.

[This operation can in no sense be regarded as hysterectomy with the cautery alone; it is the ordinary clamp-operation in which the cautery is used simply as a substitute for the scissors in dividing the broad ligaments.—H. C. C.]

NEW OPERATION FOR RETRO-DISPLACEMENT.

CZEMPIN (*Ibid.*) reports thirty cases of operation for movable retroflexion with only two failures. His method is especially adapted, he states, to displacements occurring in virgins who cannot wear pessaries. After curettage a special form of sound is introduced into the uterine cavity, the organ is anteflexed, and the patient is placed in Trendelenburg's posture. A median incision two inches in length is made just above the symphysis, and the peritoneum is exposed and dissected off for a short distance around the edges of the wound, but is not opened. The fundus is pushed upward in contact with the peritoneum so that no intestine shall be in the way, and is secured by silk sutures passed through the edges of the wound and the opposed parietal and visceral peritoneum. After closing the fascia with catgut and the skin with another layer of the same sutures, the fixation-sutures are tied over a roll of gauze and are left in position for two weeks.

[This is simply the so-called "transperitoneal hysterorrhaphy," which was described by Krug, of New York, several years ago.—H. C. C.]

THE INFLUENCE OF CASTRATION ON METABOLISM.

CURATULO and TARULLI (*Centralblatt für Gynäkologie*, 1895, No. 21), as the result of experiments upon animals, arrive at the following conclusions: The ovaries, like other glands, have a secretion peculiar to themselves, which is separated from the blood, but the chemical composition of which is at present unknown. It possesses the property of oxidizing phosphorus compounds, or those which furnish the lime-salts of the bones. Hence after the removal of the ovaries in cases of osteomalacia there is an increased deposit of calcium and magnesium phosphates in the bones, thus restoring the normal firmness of the latter.

The increased deposit of fat observed after the normal and artificial climacteric may be explained by reference to the diminished oxidation of fat through the absence of the same secretion.

FREUND'S OPERATION FOR PROLAPSUS UTERI.

GAERTIG (*Centralblatt für Gynäkologie*, 1895, No. 22), in reporting seven operations for prolapsus by Freund's method performed by Brunn, calls attention to the fact that the procedure is not a new one, a case having been reported by Schramm, who referred to it as simply the revival of an old operation. The writer is not very enthusiastic in its favor, as only two patients remained cured at the expiration of a year. The technique is extremely simple, and no bad results followed in any instance, except transient œdema. While the simplicity and harmlessness of the operation must be admitted, one should be careful not to promise a permanent cure.

ADHESIVE PERITONITIS FOLLOWING CŒLIOTOMY.

V. MANGOLDT (*Ibid.*) reports a case of castration and ventro-fixation in which the patient, having been well for five months after the operation, began to suffer from severe abdominal pains, obstinate constipation, and difficult urination, the cause of which could not be determined. On opening the abdomen adhesions were found between the omentum and the stumps, while a space existed in front of the fundus uteri and the broad ligaments in which intestine might become incarcerated. The adhesions were separated and the partly-detached fundus was again sutured to the anterior abdominal wall.

For two years the patient enjoyed good health; then she began to have violent colicky pains, especially in the region of the cicatrix, and occasional vomiting; emaciated rapidly. A third cœliotomy revealed an adhesion of the omentum along the line of the old cicatrix, as well as to the fundus uteri. The omentum was separated, ligated, and excised, the patient making a rapid afebrile recovery, with entire relief from her former pains. Soon after she suddenly developed symptoms of ileus, for which it was necessary to open the abdomen a fourth time, when an adhesion was found between the stump of the omentum and the cicatrix, under which a coil of intestine was imprisoned. Other parietal and visceral intestinal adhesions were found and separated. The patient again recovered rapidly, and had gained twenty pounds since the last operation.

All four cœliotomies were strictly aseptic, no fluid was introduced into the abdominal cavity, adhesions being separated by scissors, the Paquelin, or by blunt dissection. The bowels were moved on the third day after each operation, and were kept open afterward, yet the adhesions formed nevertheless.

THE ANATOMY OF CARCINOMA UTERI.

VEIT (*Centralblatt für Gynäkologie*, 1895, No. 24) makes some important practical suggestions growing out of his more recent anatomical studies of this subject. He does not think that sufficient attention has been paid to the different varieties of cancer in the giving of a prognosis as regards recurrence after hysterectomy, nor is he inclined to agree with Winter in his statement that a considerable proportion of such recurrences are due to the infection of healthy raw surfaces during the operations. He divides cases of carcinoma of the cervix clinically into those in which the disease is situated in the portio or in the cervical canal, and in which it appears in a nodular form in the cervix, or, as disease of the corporeal endometrium. Primary nodules in the cervix originate in the connective-tissue, and are now regarded as endothelioma. As regards extension of the disease, the writer has often found cancer-cells in the lymphatics of the broad ligaments; when these infected vessels are divided during operation it is natural to infer that they form foci, from which a rapid recurrence takes place. The latter form of recurrence is characterized by the fact that the metastatic deposits present the same histological structure as the primary disease, and that they rapidly invade the deeper tissues. The simultaneous appearance of two apparently independent primary cancerous nodules can usually be explained by referring the more deeply-seated one to secondary infection.

PÆDIATRICS.

UNDER THE CHARGE OF

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FRESH-AIR TREATMENT OF PERTUSSIS.

ULLMANN (*Jahrbuch f. Kinderheilkunde*, Bd. xl. S. 39) is thoroughly convinced of the efficacy of the fresh-air treatment of pertussis. For sake of comparison between the period passed out of doors and that passed in the house, he has noted, in a series of cases, the hours spent in each, and the number of paroxysms and their intervals under the two conditions. From these data he concludes that the fresh-air treatment is one of the most efficacious, if not the only one, for the management of a case of whooping-cough. The child should pass the entire day out of doors, not only in the warm season, but even at all times of the year, provided it be not stormy. It is considered only necessary to prevent the child from running or talking or otherwise provoking an access of coughing. Contrary to general teaching, he advocates the open-air exposure of the patients even when there is bronchitis or broncho-pneumonia, whether consecutive to pertussis or not, the only precaution being to have the little ones well wrapped up. This plan he has practised with infants a year old suffering from grave broncho-pneumonia. During this treatment the author employs neither a specific nor narcotics. In the presence of very grave broncho-pneumonia he prescribes spirits of camphor with an expectorant.

THE IMMUNIZING EFFECTS OF ANTITOXIN.

MORRILL (*Boston Medical and Surgical Journal*, June 27, 1895) reports the results of an extensive experience in the use of antitoxin as an immunizant in the wards of the Boston Children's Hospital. A total of 438 injections were given between January 13th and May 13th—of these 109 were of Gibier's serum, 104 of Behring's, 74 of Aronson's, and 151 of the antitoxin prepared by the Massachusetts State Board of Health. The largest number administered to one child was 7. Many of these patients were under treatment for acute diseases at the time of injection—croupous and broncho-pneumonia, grippe, tubercular peritonitis, empyema, typhoid, and various surgical conditions. Dangerous symptoms were observed in only one case: a boy, aged two years, with leucocytosis and enlarged spleen, upon whom two preceding doses had produced no effect, had a temperature of 105.4° F., and considerable œdema about the point of injection. These symptoms promptly subsided after stimulants and cold baths. As a rule, the temperature was observed to rise less than a degree a few hours after injection, and in 75 per cent. of all cases this was all there was to be seen. Erythema around the point of injection occurred in 23 cases. In 4 it was very extensive, and closely resembled erysipelas. The average duration of this symptom was three days; in some cases it lasted only a few hours. It usually appeared on the first day after antitoxin, and never later than the eighth. Urticaria occurred 28 times. The frequency, severity, time of appearance, and duration of this symptom varied greatly with the brand of serum employed. That of Gibier (Pasteur Institute of New York) produced it in 22 per cent. on the (average) seventh day, and lasting (an average of) two and a half days. Behring's caused it in but 1 case, appearing on the eighth day and lasting three days. Aronson's gave rise to no urticaria. The serum of the Massachusetts State Board of Health produced in about 4½ per cent. an eruption, appearing on the (average) second day, and disappearing in a day and a half. This serum at present very rarely gives rise to anything cutaneous, although at first urticaria was of pretty common occurrence. In three instances the erythema was papular and very closely resembled measles. In two instances an eruption like scarlet fever was present. Occasionally a child whose skin remained clear after the first or second or third immunization, broke out with an erythema or an urticaria after a subsequent injection. The same brand of serum may produce an urticaria, an erythema, or no skin eruption whatever in the same subject, as proved in more than one instance where repeated injections were given. Pain (at times intense) was noticed about the point of injection in 16; œdema in 7; axillary or inguinal glands enlarged in 3; general malaise (in 1 instance a mild delirium) in 3. Pain in the articulations in less than 1 per cent. Nausea, with or without vomiting, in 2 per cent. Diarrhœa (ephemeral) in less than 3 per cent. Increased frequency of micturition was noted in rare instances. The urine of 82 children was very carefully examined with reference to the effects of antitoxin on the kidneys, and the result of 540 examinations may be briefly stated as follows: In 20 per cent. no change whatever was detected. Of the remaining 80 per per cent., those which had been free from albumin previous to immunization, showed a slight trace—in most instances the slightest possible amount, which could be detected only when placed in front of a dark background. This within twenty-four or forty-eight hours after injection. In cases where albumin had been present before the use of antitoxin, there was a very slight increase of the amount. In no case was there any diminution in the amount passed, or any evidence of failure to eliminate properly. Repeated microscopic examinations revealed nothing more than an insignificant amount of renal irritation in any case; and when the albuminuria was produced by antitoxin, it disappeared in a period varying from two to three days to a fortnight.

With regard to the protection afforded by antitoxin, his experience has tended to show that the serum, when fresh, can be relied upon to immunize against anything resembling clinical diphtheria for thirteen days, and very probably for a longer space of time. Moreover, in no instance was the bacillus detected in the nose or throat of any child who started with a clear record in a shorter space of time than that just mentioned. This last point (if eventually established) is of practical importance as showing that an immunized child is not only safe from diphtheria, but is also safe as concerns others for a definite length of time.

Diphtheritic Lesions of the Nervous System.

Crocq, fils (*Congress of Internal Medicine*, Bordeaux, 1895; *Revue Mensuelle des Maladies de l'Enfance*, September, 1895) reports some interesting experimental researches upon the nerve-lesions of diphtheria. Rabbits were inoculated with four-months-old culture of Lœffler bacilli, weak enough to intoxicate but to assure life for periods varying from one to three months. Disturbances of motion were invariably observed, but sensation was affected in but one case. Autopsies showed that the diphtheritic poison acts upon the cord, the nerves, rarely upon the medulla, and never upon the brain. These lesions consist of swelling of the nerve-cells, loss of their protoplasmic prolongations, disappearance of nuclei and extensive proliferation of the cells of the ependyma. Acute myelitis is rare. The toxine seems to have an elective action upon the nerve-cells, and only exceptionally determines proliferation of the connective tissue. The lesions of the nerves appear from the fifth day; the axis-cylinder segments, the protoplasm becomes more abundant, the myeline becomes granular and is absorbed, and the axis-cylinder disappears. The anterior nerve-roots are always affected, but the posterior only show some degenerated fibres arising from cells of the anterior horns. The rare lesions of the inferior portion of the medulla do not progress, and may even disappear. In the rabbit it seems that the cord lesions precede those of the nerves. Whether this occurs in man is an open question. With him diphtheritic paralyses are of two kinds—one localizes itself in the bucco-pharyngo-laryngeal apparatus, the other is generalized. Experiment, however, produces only the latter class, dependent upon lesions of the cord. It seems, therefore, that the generalized paralyses observed in man are of spinal origin, and that the nerves are altered secondarily, while the localized forms affecting certain fasciculi and accompanied by anæsthesia are due to primary neuritis.

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ON THE VISCERAL COMPLICATIONS OF ERYTHEMA EXUDATIVUM MULTIFORME.

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By exudative erythema is understood a disease of unknown etiology with polymorphic skin lesions—hyperæmia, œdema, and hemorrhage—arthritis occasionally, and a variable number of visceral manifestations, of which the most important are gastro-intestinal crises, endocarditis, pericarditis, acute nephritis, and hemorrhage from the mucous surfaces. Recurrence is a special feature of the disease, and attacks may come on month after month, or even throughout a long period of years. Variability in the skin lesions is the rule, and a case may present in one attack the features of an angio-neurotic œdema, in a second of a multiform or nodose erythema, and in a third those of peliosis rheumatica. The attacks may not be characterized by skin manifestations; the visceral symptoms alone may be present, and to the outward view the patient may have no indications whatever of erythema exudativum. Of the eleven cases here reported the visceral manifestations were as follows: In all gastro-intestinal crises—colic, usually with vomiting and diarrhœa—five had acute nephritis, which in two cases was followed by general anasarca and death; hæmaturia was present in three cases; hemorrhage occurred from the bowels in three cases, from the stomach in two cases, from the lungs in two cases, from the nose in three cases; one patient had spongy and bleeding gums; two cases presented enlargement of the spleen; in one case there were recurring attacks of cough and bronchitis without fever; in one case there was a heart murmur. Five of the cases had swelling about and pain in the joints.

The skin lesions were polymorphic, ranging from simple purpura to extensive local œdema, and from urticaria in all grades and forms to large infiltrating hemorrhages of the skin and subcutaneous tissues. In individual cases the cutaneous eruptions were often of the most varied character.

The remarkable tendency to recur is a feature of all forms of exudative erythema. It will be noted that of the cases here reported in only one was the attack single. In the others there were multiple outbreaks distributed over periods ranging from two months to eight years.

A majority of the cases would be described under the heading of purpura or peliosis, since hemorrhage was the most constant lesion, but the variable character of the eruption, and its interchangeable nature in individual cases, make a wider definition of exudative erythema the more acceptable. A remarkable circumstance, which I have not seen mentioned in the literature (though it is not likely to have been overlooked), is the recurrence of severe attacks without cutaneous manifestations. In the first two cases—which are at present under observation—one would not for a moment suspect the true nature of the disease from the existing manifestations, which are entirely visceral.

I will first give a detailed report of the cases which have come under my observation.

CASE I. *For six years recurring gastro-intestinal crises—colic, vomiting, and diarrhœa—with fever, delirium and erythema multiforme; for two years no skin lesions with the attacks; enlargement of the spleen.*—Benjamin L., aged twenty-seven years, Norfolk, Va., consulted me October 14th, complaining of attacks of gripes and cold feet, which have recurred very frequently during the past eight years. For a time the attacks were thought to be severe indigestion with colic. They recurred at first every two or three months; he once passed six months without an attack, but for nearly three years he does not think that he has ever been free for so long as two months. He gives an account (corroborated by that which his wife has written) of a very remarkable series of events. He is always, for a day or two, warned of the attack by the occurrence of

Cold feet, an unerring premonitory feature. They are also cold to the touch, sometimes for as long as forty-eight hours. Frequently, too, he has had at this period uneasiness in the stomach. Independent of food or of the time of the day, he then begins to feel pain in the abdomen, and has severe

Gripes, as he calls them; sharp recurring attacks of colicky pains in the central portion of the abdomen. Formerly the pain was severe enough to double him up, but of late years it has not been so intense, and he gets more relief by straightening himself out to the full extent. He often vomits, and in the early attacks always did so. Of late years he has had more belching, which seems to relieve the pain. In some attacks he has had diarrhœa, but of late he has been constipated during and after them. With the abdominal symptoms, sometimes preceding them, there is

Fever. He gets burning hot everywhere but in his feet. Within a few hours he becomes delirious; as his wife expresses it, he talks "out of his head." He himself says that he talks much nonsense, just as in a fever, and imagines all sorts of things. One of his favorite fancies is that in an attack, during the colic, he has twenty-six throats and twenty-six stomachs, which are all in a row, and he cannot pick out the one which belongs to him, and which is causing the pain.

I had obtained this much of the history from him, and was beginning to be very interested, as it seemed an unusual sort of affection, when he voluntarily expressed the information that in the attacks "great big liver spots came out all over him." In several of the first attacks he thought he had been poisoned by eating something that had disagreed with him. The spots came out on the trunk and arms, not so often on the legs, and they were sometimes so large that they took days to disappear. Some have been as large as the palm of his hand. They are always red, sometimes raised, but never itch. During the first few years almost every attack was characterized by them. For nearly two years he has not had any of the blotches on the skin. The entire duration of the attack is from six to ten hours. After them he feels very sore in the abdomen, particularly the right side. He is irritable and has lack of energy. He has never had pain or swelling in the joints. The urine is sometimes high colored, but not more, he thinks, than is common in fever.

There is no similar disorder in his family. He has always been a healthy, strong man, and is actively engaged in business. This disease has always been a great trouble to him, as he never knows at what time it may attack him.

The patient is a medium-sized man; looks healthy, though a little pale; the tongue is clean; the gums are not swollen; the pulse is quiet; the examination of heart and lungs is negative.

The abdomen looks natural; is not swollen. On deep inspiration the edge of the spleen is distinctly palpable; area of vertical dulness five fingers' breadth. The stomach is not enlarged; liver normal, no increase in size. The urine is not albuminous. There are no spots now on the skin; no swelling of the legs; no swelling of the joints. The retinæ are normal.

CASE II. *Attacks of colic for a year, with bleeding at the nose, anœmia, and one outbreak of urticaria; recurring attacks of cough. Subsequently attacks with arthritis and lesions of erythema exudativum; enlargement of the spleen.*—The following case is of great interest because of the persistence of the abdominal symptoms with ill health and anæmia for such a long period before the appearance of arthritis and erythema exudativum.

W. E. B., aged eleven years, was seen first March 10, 1894. Family history excellent. He is a well-grown boy, very active and intelligent. About a year ago he began to have attacks of severe pain in the abdomen, coming on very abruptly, not associated with any errors in diet, and often of such severity that he would roll upon the floor in great pain. After the attack passed off he would be quite comfortable. At this time he had several attacks of bleeding at the nose, and got pale. His appetite kept good and he has never had any vomiting. During the latter part of the summer he had a very "brazen" cough, which was suspected to be pertussis. Once during last summer he had an attack of hives below the knee. He has never had any rheumatism; never complained of any pain about the joints, but he has had pains low down under the left ribs.

The appetite for the past year has not been very good, and he has been very particular about his food. The bowels have been regular, and the attacks of colic have never been followed by diarrhœa.

During the winter he remained pale and had occasional attacks of colic, and the cough recurred at intervals. He has been able, however, to go to school, but has not been at all strong.

Present condition. A fairly well-nourished boy, a little pale in the face, but the lips and tongue are of good color. The muscles are feebly developed; the skin is clear; there is no purpura, no staining.

The abdomen looks a little large, is soft, nowhere painful on deep pressure. The edge of the liver can be readily felt at the costal margin. The spleen is enlarged and extends in the parasternal line nearly to the level of the navel; the edge and its notch are to be felt very plainly. The upper limit of dulness is at the lower margin of the seventh rib.

The heart-sounds are clear, and there is no enlargement of the organ. The lungs are everywhere clear on percussion, but at the right apex and right upper axillary region there are a few medium-sized moist râles.

The blood presented no special changes; the leucocytes were not increased. There was a moderate grade of anæmia, about 80 per cent. of red blood corpuscles, and about the same of hæmoglobin. The urine was clear, and contained neither albumin nor tube-casts.

I confess to have been quite puzzled by the case. The history of protracted colic with cough and the moderate anæmia with enlargement of the spleen formed a symptom-group which did not seem to come into the category of any recognized affection. There had been no articular troubles, and the occurrence of the urticarial rash last summer seemed to be an accident.

On April 9th his mother said that he had complained several times of pain in the left shoulder, but there was nothing to be seen on inspection.

Under the free administration of arsenic and iron he improved a great deal, and the spleen reduced considerably in size. In the middle of April he had an attack in which the cough was much aggravated, and he had slight fever, the temperature reaching nearly to 102°. There was no dulness, but at the apex of the left lung there were many moist râles before and behind. It was with great difficulty that any expectoration could be obtained; it was bronchial and contained large numbers of alveolar cells. He improved very much toward the end of the month.

Friday, May 18. He has been doing very well. The spleen is only just palpable beneath the edge of the ribs. He has complained since last Sunday of pains about the legs and knees. I noticed to-day one or two bluish stains as if there had been purpura.

22*d*. The patient came again to-day. Last Friday evening when he went home the ankles were swollen and red, and blotches of urticaria and purpura came out over the instep and first phalanges of the toes. They extended along the outer surface of the left leg and there were a few on the right, but there was not so much swelling in the feet. This is the first occasion on which he has had an outbreak of purpura; with it he had an attack of severe colic, the first for several weeks. The legs and feet to-day present the fading stains of the purpura. There is no swelling and no soreness, and he feels quite well. The trouble in the lung seems to have almost disappeared, and he has very little cough.

June 6. Since the last note the boy has been very well, with the exception of an attack of œdematous swelling on the back of the left hand. To-day he has had a good deal of itching and an acute attack in both ankles. The condition is as follows: On the back of the left hand there are three or four scattered patches of erythema with exudation. Over the knuckle of the little finger there is considerable swelling, but no ecchymosis. The right ankle is swollen, and the swelling extends over the dorsum of the foot and about half-way up the ankle. There is some heat, and extending for about two inches above the malleoli on either side there are mottled ecchymoses. The same extend half way down the dorsum of the foot. The left ankle is a little puffy, and the entire leg is covered with the remnants of purpuric urticaria. Though the ankles are swollen and look very sore, yet he was able to walk to the house, and could take off his shoes and stockings alone. Temperature, 99.2°.

27*th.* Patient has been at Atlantic City and has not been materially benefited. He looks thin and pale; the spleen is still palpable, and the edge can be felt two fingers' breadth below the costal margin. He has had no skin trouble since the last note.

October 30. He has been much better until to-day, when he had an attack of colic. He looks pretty well, and has no blotches, no purpura since spring. The spleen is decidedly smaller; the edge only just palpable. The liver is not enlarged. The piping and moist râles have all disappeared. He took the Fowler's solution in full doses at intervals to the 15th of August.

December 7. He has had no arthritis since May, and no spots, but there have been many attacks of pain in the abdomen, which last only five or ten minutes. The edge of the spleen can still be felt. The liver is not enlarged. His color is good; his tongue is clean. I ordered the syrup of the iodide of iron. He has been taking the Fowler's solution at intervals since last May and cod-liver oil since the 15th of August.

March 9, 1895. He has kept very well through the winter and has been at school. Yesterday his father allowed him to play hockey. Last night he had very severe attacks of colic. He has had them also at intervals through this morning. I saw him at 5 o'clock; he seemed better. There was no arthritis; no skin eruption. He had had one tender point on his right shoulder. He had had some cough, and there were numerous piping râles, chiefly at the right apex. Examination of the abdomen was negative; the spleen was smaller than it had been on any previous occasion. The liver was not enlarged; no tenderness anywhere on palpation.

June 5. He has been much better; no attacks of colic; no spots. He began to cough about three weeks ago, and now coughs "terribly" at night. The spleen is a full hand-breadth below costal margin. There is a remarkable condition of right apex again; the note is higher in pitch than normal as low as the fourth rib and behind to the spine of scapula. There are many large moist râles over whole infra-clavicular, mammary and upper axillary regions. The breathing is not tubular, but is a little harsh.

19. The cough has been better. The spleen is not so large as at last examination, only just two fingers' breadth below the costal margin.

The resonance is still a little high pitched at the right apex; numerous crackling râles from the clavicle, extending through the mammary region into the axilla.

October 21. He has had a good summer. The spleen is only just palpable; no colic; no spots. Recently the cough has returned, and there are now crackling râles at the left lower mammary region and right lower axilla; a few, too, at the apex.

CASE III. *Joint pains; colic with diarrhœa; urticaria; purpura urticans, appearing in crops; melæna; acute nephritis; death.* (Abstract.[1]) —A boy, aged six years, seen with Drs. Dunton and Agnew. There was a rheumatic history in the family, and the child of an aunt on the father's side died of purpura hemorrhagica. The onset was with pains in the ankles, followed by colic and an urticaria-like eruption. Hemorrhage from the bowels followed in about ten days. The recurring attacks of colic were most distressing. About the fifth week after the onset the urine became scanty and albuminous, and showed a few blood-corpuscles and numerous tube casts. After the development of the dropsy the attacks of purpura ceased, and he died of the acute nephritis within three months of the onset of the illness.

CASE IV. *Second attack; arthritis; cutaneous hemorrhages and urticaria; colic; vomiting; albuminuria; recovery.* (Abstract.[2])—The patient, a man aged forty-six years, was admitted to the Philadelphia Hospital, under my care, with diarrhœa and extensive purpuric rash and polyarthritis. About eighteen months before he had had a similar very severe attack, which had lasted three weeks. In the present one he had recurring colic, swelling, and tenderness of both elbows, of the right knee, and of the right ankle. There were numerous purpuric spots on arms and legs. The vomiting was a very distressing feature. Three days after admission a fresh eruption occurred of urticaria and purpura. The gums were not spongy. The urine contained much albumin and many hyaline and epithelial casts. The patient improved rapidly, and within a month from the time of admission seemed quite well, though on his discharge there was still albumin in the urine.

CASE V. *Gonorrhœa; acute arthritis and synovitis, with purpura; severe colic and vomiting, with successive outbreaks of purpura, urticaria, and larger extravasations; hæmaturia. Recovery after an illness of two months' duration.*—Jas. McD., aged eighteen years, was admitted to the Johns Hopkins Hospital March 16, 1890, complaining of pain and swelling in the wrist-joints and fever. The patient knows very little of his family history, other than that his father died of pneumonia.

He has always been healthy, and can only recall having measles when seven years old. He has never had rheumatism. He contracted gonorrhœa a month ago and still has a slight discharge.

Present illness began March 9th with fever, pain, and swelling in the knees and in the calves of the legs. He did not go to bed, but attended a dispensary in the city and was ordered an ointment. On March 12th the wrists became swollen and the fever increased, and he had much pain in the back. Two or three red spots came out on the skin.

Present condition. The patient is a well-nourished young man. The temperature is 99.5°. The face is flushed; lips red; tongue coated on the dorsum, red at the edges. There is now no swelling of the knees.

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[1] Reported in full in New York Medical Journal, December 22, 1888.

[2] Ibid.

Both wrists and the backs of the hands and of the fingers are swollen and tender, and are reddened and pit on pressure. The swelling over the wrists is chiefly subcutaneous. Movement of the joint is not painful. On both legs, on the ankles and on the feet there are numerous ecchymoses, varying in size from a half to five or six millimetres. They are also present on the inner surface of the thighs, and a few are scattered on the back and buttocks. About the ankles there are some larger, confluent ones, which are capped with vesicles. The heart's action was regular and there were no murmurs. The urine was yellowish in color, a little smoky, acid, sp. gr. 1025, and microscopically it presented many blood-corpuscles, with some hyaline and a few epithelial casts. The meatus of the penis is red and moist, but no discharge can be squeezed out. A bacteriological examination was made of the material from the vesicles on the legs. Esmarch's tubes were made, but nothing grew. At first we regarded the case as one of gonorrhœal synovitis with purpura, but the subsequent history of the case shows that it must be grouped as erythema exudativum.

March 17. A large, swollen, hemorrhagic wheal developed on the inner malleolus of the right leg. In the evening the patient complained of much deep-seated pain in the abdomen, and vomited.

18*th*. The temperature has ranged from 99° to 101°. He vomited again this morning and complains a good deal of pain in the back.

20*th*. The urine contains much less blood, but hyaline and epithelial casts are still present. For the first time a murmur was noticed to-day in the pulmonary area.

22*d*. The hands are very much better. The left biceps to-day about its middle is swollen and tender, and it pains him to move it.

23*d*. The patient complains of a great deal of pain in the abdomen below the navel. He has had no further vomiting. Fresh purpuric spots are present to-day over the clavicles. The swelling of the left biceps has increased; extension of the arm is particularly painful. There is no discharge to-day from the urethra.

24*th*. A group of ecchymoses has extended about the neck. The biceps to-day is very tender. He complains much of pain in the abdomen, and for this in the evening he had to be given a hypodermic of morphine. The urine still contains a moderate amount of albumin, red blood-corpuscles, and numerous hyaline casts. It has a distinct cherry color.

25*th*. A small, raised erythematous area has appeared over the right instep, capped with a distinct bleb. Cultures from this were made, which subsequently showed the presence of the ordinary pus organisms.

26*th*. Albumin and casts persist.

27*th*. Urine is lighter in color, no blood noted to-day. Patient has improved somewhat; the biceps is better.

29*th*. Within the past twenty-four hours a large patch of purpuric spots has developed on the outer side of the left forearm, and on the right buttocks there has come out a crop of ordinary urticaria with somewhat injected margins.

31*st*. No casts noted in the urine. Patient has had no abdominal pain for some time.

April 1. New crop of purpura on the dorsum of the right foot. No fresh articular trouble. The temperature has ranged from 99° to 100° and 100.5°. The heart-sounds at the apex are clear. Daily notes were made on the urine, and albumin and hyaline casts were present. He improved a good deal, though at times he had sweats. On the 15th he had a recurrence of vomiting and of the abdominal pain, and a fresh crop of petechiæ came out on the right side of the neck and chest. Pain in the abdomen was so severe that he required morphine hypodermically. Blood did not appear in the urine. On the 16th he was better. On the 17th the vomiting was very severe and the abdominal pain most intense in the region of the stomach. The tongue was clean and moist; he has no fever, and he slept well after the morphine. There were a few ecchymoses also on the right elbow.

18*th*. The pain in the abdomen is better. The tongue is to-day coated; the urine is turbid, smoky, and dense, an unusually large number of tube casts, some of which are pale, others made up of leucocytes and a few blood-corpuscles.

19*th*. The blood persists in the urine; the casts are not so numerous.

From the 20th to the 22d he was better, no fever. On the 23d a fresh crop of purpura came out on the right instep. He has no fever, and has been better; appetite good. He has gained in weight. He improved quite rapidly early in May and left the hospital on the 12th. At the time of discharge the urine had a specific gravity of 1013, contained a trace of albumin and a few hyaline casts.

CASE VI. *Third attack. Purpura, colic, and melæna; vomiting; recurring attacks; albuminuria; death from pneumonia.*—Wm. L., aged nine years, admitted to the Johns Hopkins Hospital October 18, 1892, complaining of spots on the arms and legs. The family history is good; the father and mother, two brothers, and one sister are living and healthy. The mother had rheumatism in right hand fourteen years ago.

The patient has always been a delicate child. He had pneumonia when three years old, and measles when six. No other illness. Sixteen months ago he had the first attack of the affection with which he suffers at present, namely, spots on the skin, which recurred frequently with pain in the bowels and blood in the stools. The present illness began about two months ago; the spots first appeared. He lost his appetite and got pale. Five weeks ago he had the first attack of pain in the abdomen, with nausea and vomiting. It lasted all day and he had several bloody movements, and there was a little blood in the vomitus. In a week or ten days he improved and remained better until two weeks ago, when an attack began in the same way, with little pain in the abdomen, nausea and vomiting, and bloody stools. On several occasions his knees have been a little stiff in the evening, but there has been no swelling and no pain. In one of the attacks his mother states that he coughed up a little blood, and one day his nose bled. With each attack a fresh crop of spots appeared on the skin.

Present condition. He is a healthy-looking boy; the lips and mucous membrane are perhaps a little pale; the pulse is of good volume, 104; the temperature is 100°. When asked what is the matter with him he places his hand on the abdomen and says he has pain and soreness. Over the arms and legs there is a copious purpuric rash. The spots on the legs are fading; those on the arms are fresh. On the afternoon and evening of the 19th he vomited a great deal, and was unable to retain anything, and had a good deal of pain in the shoulders. No blood appeared in the vomitus or in the stools. On the morning of the 20th a fresh crop of spots was noticed, particularly over the shoulders and back.

The joints were neither enlarged nor tender. The apex beat was inside the nipple line; the sounds were loud and clear. The abdomen looked natural; the spleen could not be palpated; the area of dulness was not increased; the liver was not enlarged. The urine was turbid, yellow, sp. gr. 1020, and presented a trace of albumin. On the 22d, after the attacks of vomiting and pain and the fresh crop, the specific gravity was 1020, the amount of albumin had increased, and a few finely granular tube casts were found and a few red blood-corpuscles.

The patient improved very much on the 21st and 22d, the vomiting ceased, and on October 23d his mother removed him.

At home he got somewhat better, and the purpura did not develop so long as he stayed in bed. There was no return of the pains in the stomach or of the vomiting. He remained pretty well until about the 16th of November, when he had a chill, which was followed by pneumonia, of which he died on the 28th of November. During the illness the temperature was high; no purpura developed.

Case VII. *Hip disease; subcutaneous hemorrhages; purpura urticans; colic; vomiting; arthritis; great œdema of forehead; albuminuria; recovery.*—Mary R., aged four years, seen November 15, 1890, with Dr. Finney. The child had always been healthy and strong until June of this year, when she began to have symptoms of hip disease. She was seen by Dr. Halsted and Dr. Finney toward the end of October, and two injections of iodoform into the joint were made.

On Thursday, November 6th, she had been restless all day, and in the evening the mother noticed that her hands were swollen and covered with bluish spots. Dr. Finney saw her that evening, when she had slight fever, temperature about 101°, and the hands presented a swollen appearance due to subcutaneous localized infiltrations with blood, giving a curious patchy blueness. These were seen on the palmar as well as the dorsal surfaces. The following day there was a very extensive purpuric urticaria about the elbows, ankles and knees, and irregularly scattered over the limbs. There was no special swelling or soreness of any of the joints.

On the 8th she began to have pains in the abdomen of a cramp-like character, coming on at intervals with vomiting. The urine was clear and free from albumin; the bowels were not loose. From the 8th to the 15th, when I saw her, she had in brief the following symptoms: 1. Successive crops of most extensive cutaneous hemorrhages, chiefly in the form of urticaria, but many were deep, subcutaneous, and presented through the skin only a bluish diffuse color. There were also many smaller purpuric spots not raised above the surface of the skin. 2. The feet were swollen and the ankle-joints enlarged and tender. The other joints did not seem to be affected. 3. On the 12th the forehead became greatly œdematous, and the swelling extended to the eyelids, closing them completely. This swelling was not associated with hemorrhage. There were several spots on the face and ears. 4. Extreme general sensitiveness so that the slightest touch seemed painful. 5. Abdominal symptoms, consisting of paroxysmal attacks of colic of great severity and of obstinate vomiting. At the time of my visit the child was better than she had been for four days. She was sitting up in bed, and the face looked bright. The left cheek was swollen, tender, and presented on the mucous surface a patchy, whitish appearance. The arms were covered with fading ecchymoses. Those about the elbow were still raised from infiltration of the skin, and on the hand on both sides there were bluish subcutaneous infiltrations. The spots were not numerous on the thorax, but were tolerably abundant upon the abdomen and very numerous over the buttocks, where they presented the appearance of ordinary urticaria. The patches almost covered the skin of the face, and about the extensor surfaces of the knees. The ankles looked large, rather it seemed from subcutaneous infiltration than from involvement of the joints themselves. They were, however, painful on pressure. The feet were swollen, the skin tense, due largely to a diffuse subcutaneous infiltration with blood. The abdomen was not tender, there was no enlargement of the liver or spleen, the heart-sounds were normal. The blood was examined by Dr. Thayer, and showed nothing special except a slight increase in the number of leucocytes. The bowels were constipated. The urine seemed normal in quantity and contained a trace of albumin, but no blood.

Dr. Finney had given various remedies without special influence. Ergot was employed without success. The solution of morphine seemed to be most effectual, allaying the pain and giving the child sleep. The child recovered completely.

Case VIII. *Slight trauma; crops of purpura; no arthritis; severe colic with diarrhœa; acute nephritis; general anasarca; uræmia; death.*—Olive L., aged five years, referred to me by Dr. Goldsborough, of Cambridge, Md., July 14, 1891, with general anasarca.

The father has suffered much at times with rheumatism; the mother and three other children are well.

This was the first child; she had always been strong and robust.

On June 14th, just a month ago, while playing under a cherry-tree, she struck her foot against a chair, and complained very much to her mother that it hurt her. Very soon she could not move the leg, and by nightfall, it is stated, that she could not move either leg. A small congested spot was seen on one ankle, and it was thought possible that something had bitten her. The next day a rash came out on the skin of the legs, irregular patches of a bright red color, which within twelve hours turned to a dark purple. For two weeks they came out in crops, and as they disappeared œdema of the feet was noticed, and the urine became scanty. There was no hæmaturia. The bowels were regular; her appetite was poor, but she had at times severe pains in the abdomen.

Present condition. The child presents general anasarca and is very anæmic. The tongue is moist; pulse 100; no increase in tension; the temperature is normal. Upon the skin of the legs to the middle of the thighs, and upon the arms to the elbows, there are irregular brownish stains from 5 to 30 millimetres in diameter. The examination of the heart and lungs is negative; apex beat is in normal position. The abdomen is large, and there is dulness at the flanks, but the chief distention seems to be due to tympany. The spleen is not palpable, and the liver is not enlarged. The anasarca extends to the back, and is, of course, most marked on the legs and thighs. The urine was not examined at the hospital, but Dr. Goldsborough, who had made frequent tests, stated that it presented both albumin and tube casts, but no blood.

Dr. Goldsborough wrote subsequently that the condition of the patient did not improve in any way. No further attacks of purpura occurred, but she had frequently colicky pains and diarrhœa. The anasarca continued in spite of all measures, and she died with uræmic coma and convulsions.

CASE IX. *Arthritis; purpura urticans; colic and vomiting; recovery.*—Lewis J., aged twelve years, admitted January 2, 1895, with œdema of the legs, pain, and purpura.

The family is healthy; there is no history of hæmophilia. One brother has been treated in the hospital for rheumatism.

The patient has had measles, varicella, and mumps.

Present illness began December 16, 1894, with pains in the legs. The left ankle was swollen on the 21st and remained swollen up to the date of his visit on the 26th. It was painful only on motion. Red blotches came out on the 20th and 21st. He had no other swelling and no abdominal pain at this attack.

I saw him on the 26th in the dispensary, and noted that he was a healthy-looking boy; gums not spongy; tongue clean. Both legs are swollen and are œdematous, and the skin shows remnants of a copious rash of purpura urticans. The tissues about the left ankle are much swollen and œdematous and the joint is stiff. He is not able to walk on it. The purpuric rash extends up the trunk as far as the chest. The heart-sounds are clear. This day when we saw him the rash was fading. On the same day after returning home he had a very severe attack, which began with vomiting, and was associated with great pain in the abdomen. This persisted on and off for three days. The pain was griping, recurring in spells, getting very much worse at intervals, and caused him to twist and squirm about in bed. A fresh crop of purpura came out with this attack. He has been getting better, but his legs have remained swollen.

On admission he had a fairly good color. The gums are a little swollen, but not spongy. The legs show numbers of small, fading purpuric spots. There is a little puffiness, but the ankles are no longer swollen. The edge of the spleen could not be felt.

The boy did very well, the swelling disappeared from the legs, and he has been up and about.

On the 15th he had a fresh eruption on the legs and thighs, most of them cutaneous and purpuric in character; others deep in the subcutaneous tissues, looking like *tache bleuâtre*. The legs became somewhat swollen. He had no colic. There was no albumin in the urine.

CASE X. *Repeated attacks of epistaxis and bleeding from the gums, with purpura. Subsequently attacks characterzied by chills, colic, and purpura urticans; recovery.*—B. W., about thirty years, Alexandria, seen February 1, 1892, complaining of swelling of the gums and a tendency to bleed.

The patient comes of a perfectly healthy family, in which there is no special tendency to bleeding.

In October, 1889, he had his first attack of bleeding from the nose and gums. It began on Monday and continued until Friday. Dr. Hamilton, then of Washington, plugged the nostrils. He was in bed at this time for two weeks.

A second attack began two weeks subsequently, with nose-bleeding, swelling of the gums, and numerous purple blotches appeared on his skin. In this attack the bleeding stopped spontaneously. He was well then until December, 1890, when he had severe bleeding from the gums, and three weeks subsequently another attack, in which he bled also from the nose. He was ill for two days, and at this time he went to New York to consult Dr. Jacobi. He then remained well for some months. In a recurrence he went to Germany and consulted Professor Baümler, who very kindly referred him to me.

During the past year the attacks have changed entirely in character; there have been at least half a dozen, the last one four weeks ago. They now invariably begin with severe pains in the abdomen and vomiting. This is followed by or associated with a chill. On one occasion it lasted an hour; then within the day bleeding begins from the gums, and within from twenty-four to thirty-six hours the skin of the legs and arms (and once of the face) become covered with raised bluish spots. The chill comes first, as a rule, and is not always very severe. Lately he has had no epistaxis, only the bleeding from the gums. The pains in the abdomen are of great intensity and are like ordinary colic. They rarely last more than half an hour to an hour. The vomiting has sometimes been severe; he never brought up any blood; never passed blood in the stools or with the urine. He has never had any pains in the joints.

The patient looks pale, but he is not profoundly anæmic; the pulse is good, a little jerky; the gums are swollen, spongy, but are not bleeding. The skin of the arms and legs is covered with remnants of the attack of four weeks ago; some of the stains are large, as if the rash had been purpura urticans.

The heart-sounds were clear. The spleen was not enlarged.

Patient sought direction with reference to the possible prevention of the attacks. He was ordered Fowler's solution and the juice of half a lemon twice daily.

I heard of this patient on the 13th of February, 1895. Dr. O'Brien tells me that, with the exception of one slight attack shortly after he saw me, he has had no outbreak. He took the Fowler's solution at intervals for a long time, and attributes his recovery to it.

Case XI. *For four years recurring attacks of colic with hæmatemesis, melæna, purpura, and arthritis.*—Annie R., aged eighteen years, seen at the Dermatological Dispensary with Dr. Gilchrist, June 29, 1895, complaining of an extensive hemorrhagic eruption on the arms and legs.

In July, 1891, when she was fourteen years old, she had the first attack, which began with vomiting and cramps in the abdomen. From her mother's description it must have been of great severity, as the stomach symptoms persisted for five or six weeks. The cramps were of such severity that she went off into spasms. At first the vomitus was not colored; subsequently she vomited blood, and she passed blood from the bowels and in the urine, and once coughed up blood. About eight weeks after her illness began, before she had recovered her strength, blotches appeared on the arms and legs, and she had pain and swelling in the knees, elbows, and fingers. In this attack she was in bed very ill, and crops of purpura recurred on and off until January. Then she got better and remained well until the following August, when she had a second attack, which was not so severe, as she had not to go to bed, but it had the same characters of cramp in the abdomen, much vomiting, and the skin eruption. She has had no arthritis since, and no bleeding from the mucous membranes. During the past two years the attacks have recurred with great frequency, and she no sooner recovers from one attack than another begins to develop. She has not, however, had cramps for two years.

Present condition. She is a healthy-looking, well-nourished girl; color is good; tongue is clean. The gums are not spongy (her mother says they never have been swollen); the tonsils are not enlarged. None of the joints are swollen. There is an extensive hemorrhagic eruption on the arms and legs, chiefly on the extensor surfaces of the arms and about the elbows. The rash does not extend to the chest and back and there are no spots on the hands or on the face. The skin of the lower extremities is extensively involved; the ankles are a little swollen and puffy and the skin over them shows many fading spots. The eruption is very abundant about the knees, where the hemorrhages in places are confluent. Some of the patches are a little raised. The eruption is somewhat symmetrically distributed on the knees. It is also very abundant on the thighs.

Patient seen again October 7, 1895. She has been taking Fowler's solution, and has been in many ways much better. Through the summer she has had four attacks, one with vomiting and colic. The vomiting began in the evening about six o'clock and lasted until 1 A.M. The spots came out with great rapidity and were very extensive over the arms and legs. In one of the attacks the knees and ankles were swollen and tender. In one of the attacks Dr. Gilchrist removed a small spot of the purpura and found, as his sections show beautifully, that the hemorrhage was chiefly about the hair follicles.

At the time of the present visit the skin is almost entirely clear.

The visceral lesions of the various types of erythema have been carefully studied by many observers. In erythema nodosum, endocarditis and pericarditis have been frequently described. Lewin[1] in 58 cases met with heart complication six times, and Stephen Mackenzie[2] found ten instances of heart affection in 108 cases of erythema nodosum. In the type of erythema characterized by hemorrhages and œdema with pains in the joints—the affection known as purpura, or peliosis, rheumatica—the visceral complications are, as Kaposi remarks, much more frequent than in erythema nodosum. They are chiefly albuminuria with nephritis and acute endocarditis.

Ever since Willan (1808) described a case of purpura associated with violent vomiting, excruciating pains in the bowels, and anasarcous swelling of the legs, thighs, and hands, cases have been reported with this remarkable symptom-complex. One of the earliest cases by Ollivier[3] is of especial interest inasmuch as with the ecchymoses there was also simple œdema of the eyelids and of the hands.

Henoch[4] in 1874, and also in the various editions of his *Vorlesungen ueber Kinderkrankheiten*, called attention to this combination of symptoms.

Couty[5] described the condition as a special form of purpura of nervous origin.

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[1] Charite Annalen, Bd. iii.

[2] Clinical Society's Transactions, vol. xix.

[3] Berliner klin. Wochenschrift, 1874.

[4] Archives de Méd., 1827.

[5] Gazette Hebdomadaire, 1876.

Of late years an attempt has been made to separate these cases as examples of an independent disease, which has been called *Henoch's Purpura*. v. Dusch and Hoche, in Henoch's *Festschrift* for 1890, have given an exhaustive description of the cases, and a tabulated list of seventeen cases in children, and twenty-two in adults. They conclude that the clinical picture presents differences from the forms of purpura heretofore recognized, which are sufficient to establish an independent and well-defined type of disease.

Though Willan gave a graphic description of a case, this symptom-group has not attracted special attention from English and American writers. Among the 54 references in the article by v. Dusch and Hoche there were only three English and no American cases. Of the recent text-books, that of McCall Anderson[1] makes, as far as I can see, no mention of it. Crocker[2] refers to two cases with gastro-intestinal symptoms. Malcolm Morris[3] is silent on the subject, with the exception of a brief reference to cardiac complications in peliosis rheumatica. Kaposi[4] lays much stress on the internal complications, among which, under erythema multiforme, he mentions hemorrhage into and gangrene of the pharyngeal mucosa, hemorrhage from the kidneys, severe arthritis, endo- and pericarditis, and pneumonia; in erythema nodosum, besides the colic, acute nephritis; and in purpura or peliosis rheumatica, hæmaturia, and endocarditis. In the works on skin diseases by American authors the special symptom-group to which I refer is scarcely mentioned.

In addition to those collected by v. Dusch and Hoche there are cases reported by Russell,[5] McKay,[6] Dutt,[7] Collie,[8] Monillot,[9] Prentiss,[10] and two cases by Musser.[11] Other cases are reported by Silbermann.[12]

When one considers how benign, as a rule, in all its types, is the course of exudative erythema, the mortality of the cases with severe visceral complications is remarkable. Of sixty-one cases (including those in v. Dusch and Hoche's table, the additional ones which I have collected, the 11 cases here reported), there were thirteen deaths, a percentage of 21.3.

Of the visceral manifestations by far the most common are the

Gastro-intestinal crises, which are claimed as the distinguishing characteristic of Henoch's purpura. The features are very varied. There may be simple colic of all grades of intensity, from a transient, readily borne belly-ache to an attack of such agony and duration that repeated hypodermics of morphine have to be given. Vomiting and diarrhœa are frequent, but not necessary, accompaniments of the attack. In some cases the vomiting occurs without the colic, or a severe attack of vomiting and diarrhœa may accompany the outbreak of the purpura. The attack bears no relation whatever to food, and may come on abruptly in a person in excellent health, and in *Case II.* (in which the colic occurred alone so frequently) the boy's mother could never notice any circumstances which increased the liability to the trouble. An identical form of colic is described in the so-called angio-neurotic œdema, many cases of which should doubtless be reckoned with this type of erythema exudativum. In fact, in one of the attacks in *Case II.* œdematous swellings occurred without purpura. In the remarkable family which I described a few years ago,[1] in which acute circumscribed œdema had occurred in five generations, the gastro-intestinal crises formed a special feature of the attacks. Of great interest in this connection is the patient whose history is given under *Case I.*, in whom for more than two years the attacks have been characterized by fever, delirium, and gastro-intestinal crises of great intensity, but without skin lesions.

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[1] Diseases of the Skin.

[2] Diseases of the Skin, 2d edition, p. 115.

[3] Diseases of the Skin, 1894.

[4] Pathologie und Therapie der Hautkrankheiten, Vierte Auflage, 1893.

[5] British Medical Journal, 1883, ii.

[6] Ibid., 1886, ii.

[7] Ibid., 1888, ii.

[8] Lancet, 1891, i.

[9] Transactions of the Academy of Medicine, Ireland, vol. v.

[10] Transactions of the Association of American Physicians, vol. v.

[11] Ibid., vol. vi.

[12] Henoch's Festschrift.

It is possible that among the cases of recurring gastro-intestinal crises of unknown etiology, such as have been reported by Leyden, some belong in this category.

Nephritis, the most serious complication, was present in five of my cases. In the total number (61) already referred to there were fourteen cases, of which four died. In the mildest grade there is only a trace of albumin, with a few tube casts, as in Case VII.; while the more aggravated cases present all the symptoms of an acute hemorrhagic nephritis. Recurring hemorrhages may take place from the kidneys, as in Case XI., without causing nephritis. In other instances, as in Case VIII., the nephritis dominates the scene almost from the outset, and may prove fatal within a few months. The amount of albumin present varies from a well-marked trace, as in Case VII., to large quantities, as in Cases III., IV , and VIII. The tube casts were hyaline and epithelial, and often contained blood-corpuscles. Dropsy was present in two of my cases. In a majority of the cases the recovery is complete, but in rare instances the nephritis becomes chronic. The only case, so far as I know, in the literature has been reported by Dr. Prentiss, of Washington. At the Association of American Physicians in May, 1890, he showed a patient aged thirteen years, who in March, 1889, had his first attack, with pain in the abdomen, vomiting, arthritis, and purpura. A second attack followed in September and a third attack in November of the same year, in which, in addition to the pain in the abdomen, there were hemorrhages from the bowels and bladder. In this attack he was delirious, and had dyspnœa and swelling of the forehead. On December 17, 1889, and on February 27, 1890, he had relapses. After this, to the date of reporting, he had recurring attacks at intervals of a month or six weeks. The urine contained blood, and on one occasion it was diminished in amount and had much albumin. A point of particular interest in this case was the fact that he had large hemorrhages into the skin, which became gangrenous and sloughed. At our meeting this year—May, 1895—Dr. Prentiss brought the patient before us again. The boy has now chronic nephritis, with dropsy, albuminuric retinitis, increased tension, and stiff arteries. In this instance the acute nephritis of 1889, associated with the extensive erythema exudativum, laid the foundation of the present chronic nephritis.

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[1] American Journal of Medical Sciences, April, 1888.

Next in order of serious import is the hemorrhage from the various mucous membranes, which were present in five of my cases. There was bleeding from the nose in three, in one of which the nostrils had to be plugged on several occasions. Case XI. had hemorrhages from the stomach and bowels, and coughed up blood. Slight hæmoptysis occurred in another case. In three there were hemorrhages from the kidneys In Case X. the gums were swollen and spongy and bled profusely in many of the attacks. Hemorrhage from the bowels is the most common, and occurred in thirty of the thirty-nine in v. Dusch and Hoche's tables, and in thirty-nine of the total sixty-one cases. In one case only of their list did the gums bleed, and in three the sputa were bloody; in no instance, I believe, did death occur directly as a result of hemorrhage from the mucous membranes.

Cardiac complications were not present in my cases; the murmur in one case quickly disappeared. Endocarditis is rare, having occurred in only two cases in the total series. Pericarditis occurred in three cases. This is a much smaller percentage of heart complications than in the cases of erythema nodosum collected by Stephen Mackenzie. I have only once seen cardiac complications in peliosis rheumatica. The case has been reported by Dr. Musser[1] who very kindly took me one day to see the case. The patient had extensive peliosis rheumatica with pericarditis and a gangrenous slough on the uvula.

The respiratory organs are less frequently involved. In Case II. the recurring attacks of cough with bronchitis are, I believe, part of the affection. The sputa always indicated bronchitis, and at times the cells of the alveolar epithelium have been unusually abundant. The cough was often dry, very annoying and persistent, and there was once or twice sneezing. In v. Dusch and Hoche's list of thirty-nine cases pleurisy is mentioned twice, bronchitis once, and pneumonia twice, both fatal cases. In Case IX. of my series pneumonia followed the disease and proved fatal. In this connection it is interesting to note the statement of Lewin, who found among seventy cases of erythema nodosum in the literature four deaths from pneumonia.

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[1] Transactions of the Association of American Physicians, vol. vi. p. 284.

The onset of the attack may be with a chill, as in Case X.; more frequently the skin lesions are preceded by feelings of indisposition and slight gastric disturbance. The curious prodrome, which has recurred during so many years in Case I., great coldness of the feet, I have not seen mentioned. Fever is a frequent accompaniment of the attack. In cases which have the type of peliosis rheumatica the temperature may range from 101° to 103°, or even higher, for several days; there may, however, be the most extensive skin lesion without pyrexia. At the height of the attack delirium may occur.

Perhaps the most extraordinary and distressing feature of the disease is the tendency to recur, which is so noticeable in all types of exudative erythema. In Case XI., in which the disease has persisted for four years, during the first two years the girl no sooner recovered from one attack than another began. In Case I., the patient's life is, as he says, a burden, owing to the recurrence every month or two of the severe colic.

Arthritis was present in five cases of my series, and in thirty-two of the collected cases. The periarticular more often than the intra-articular tissues are affected, and the chief part of the swelling is often due to effusion in the tendon sheaths about the joints, and, as in Case II., the patient may be able to walk quite well with the ankles much swollen.

The anatomical conditions associated with the visceral symptoms are not well understood, but the changes in the gastro-intestinal canal, at least, are probably the counterpart of those which occur in the skin, namely, exudation of serum, swelling, hemorrhages, and in rare instances necrosis. At autopsy hemorrhages have been found in the internal organs. A remarkable case is given by Silbermann in Henoch's *Festschrift* for 1890. A child, aged ten years, was attacked on December 15, 1887, with fever and pains in the knees. On the 16th there was an outbreak of purpura, with colic, hæmatemesis, and melæna. After persisting for three days the symptoms disappeared. The attack recurred in January with great severity, and on the 20th, 21st, and 22d there were signs of an acute peritonitis. The autopsy showed an acute purulent peritonitis, which had resulted from a perforation at the fundus of the stomach. There was no ulceration in the bowels, but the mucosa was swollen and congested. There were necrotic foci in the stomach and intestines, and thrombi were found in some of the bloodvessels. In a few instances necrosis and gangrene have occurred on the skin, as mentioned in connection with Dr. Prentiss's case.

The outbreak of this type of erythema multiforme during gonorrhœa, as in Case V. of my series, is interesting in connection with the etiology, since this is one of the infections with which a severe type of true purpura hemorrhagica occurs, and of which a fatal instance has been recorded by Patterson.[1]

I purposely refrain from discussing the relation of these conditions to rheumatism, and the question of the infective character of some forms of erythema exudativum. I have nothing to say which would help to clear the existing confusion or which is not already better said in journals and monographs easy of access. My purpose in this paper has been to call attention to the importance of the visceral manifestations of the disease.

In Cases II. and X., arsenic appears to have been beneficial; in other instances it did not seem to do good.

NEPHRECTOMY FOR CYSTIC ADENOMA IN A PREGNANT WOMAN—RECOVERY.

By Charles L. Scudder, M.D.,

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The patient, a woman nineteen years old, was first seen in January, 1891, because of pain which she suffered in the abdomen and a movable bunch which she felt in the region of the pain.

Examination found a fulness in the left lumbar region. This fulness corresponded to a mass within the abdomen the size of an orange, having a smooth surface, a rather tense, elastic feel, and moving slightly downward with inspiration.

This mass is movable to the midline of the abdomen, and can be pushed down to the level of the anterior superior spinus process of the left ilium. Pressure on this mass causes pain. The general appearance of the woman is healthy.

The urinary examination shows a specific gravity of 1022, reaction acid, color high, odor normal, albumin present, a considerable sediment of vaginal and epithelial cells, an occasionally hyaline and granular cast, no blood, no crystals, no abnormal epithelial cells.

The diagnosis of a movable kidney was made. She was fitted to a truss which she wore for some months with considerable relief to the pain.

In March, 1894, I again saw the patient, who was this time married. Examination found that the swelling in the left lumbar region had increased to the size of three fists. There is almost no discomfort felt excepting a dragging feeling.

Percussion over this swelling is flat. Fluctuation is present in the swelling. In addition to the above, she is found to be three months pregnant.

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[1] British Medical Journal, 1886, i.

Aspiration of the swelling was advised and submitted to, and fluid was withdrawn, which was examined by Dr. E. S. Wood, of the Harvard Medical School, with the following result:

Analysis of fluid, March 21, 1894. Color, blood-red; reaction, slightly alkaline; amount of sediment, much; urea, very slight trace; albumin, large amount (more than 1 per cent.); bile pigment, large quantity present. Sediment, chiefly normal blood globules, partly in rouleaux. Numerous fatty and brown granular cells, both small and large. Brown granular amorphous matter. Free oil globules. Cholesterin crystals. No hæmatoidin crystals seen.

This fluid contains a large quantity of bile as well as blood. The fatty cells and cholesterin crystals are thoroughly consistent with the fluid of a renal cyst, but I have never known one to contain bile. The very slight quantity of urea might be present in almost any fluid. The amount of albumin was very large, but the fluid evidently contained a very large proportion of blood, so that no important inference can be drawn from the quantity of albumin.

Can it be possible that you are dealing with a dilated gall-bladder?

EDWARD S. WOOD.

Examination of urine before operation, March 11, 1894. Slightly dark, acid, 1019. No albumin. No sugar. Sediment considerable. Small round cells in moderate numbers, often fatty, rarely in clumps. Considerable squamous epithelium, occasionally in large sheets. A considerable number of large, round, epithelium cells, rarely in sheets. Rarely a small, round, epithelial cell. Occasionally large caudate cells. A few calcic oxalate crystals. No blood or casts. 24° amount, 41 ounces; 24° urea, 22.3 grammes.

A diagnosis was made of a cyst of the kidney. Owing to its rather rapid increase in size during the past few weeks, and fearing that if it should increase in size still more rapidly, along with the normal increase in size of the pregnant uterus, that there might be a mechanical obstacle offered to delivery, and fearing that the tumor might be malignant, it was thought wise to operate at once.

On March 31, 1894, the operation was done, under ether, by an incision just outside the left linear semilunaris over the centre of the tumor. The descending colon was found lying in front of the tumor. The outer part of the mesocolon was incised. The kidney on the right side was found to be normal in feel and in position. The tumor was reached through its capsule and enucleated. The pedicle of the renal vessels and ureter was tied with split and double ligature.

Before attempting enucleation, the peritoneum along the middle line of the abdominal incision was sutured to the inner edge of the split capsule of the tumor, thus closing the peritoneal cavity.

This prevented the escape of fluid into the peritoneal cavity and kept the contents of the cavity in proper bounds.

No drainage was used, and, although a large surface was exposed, all the sides of the wound fell together readily. The woman made an uninterrupted recovery.

The urine chart recording the 24° amount of urine secreted for the first fourteen days after the operation is extremely interesting.

April 1st there were secreted 14 ounces; 2d, 11 ounces; 3d, 16 ounces; 4th, 26 ounces; 5th, 30 ounces; 6th, 32 ounces; 7th, 30 ounces; 8th, 30 ounces; 9th, 31 ounces; 10th, 33 ounces; 11th, 31 ounces; 12th, 35 ounces; 13th, 32 ounces; 14th, 32 ounces.

There was a very careful examination made by *quantitative* analysis of the urine each week following the operation. It seemed extremely important to know exactly what one kidney was able to do alone, not only in the amount of urine secreted, but in the quality of the urine.

I have appended the reports of the urinary examinations made by Dr. E. S. Wood.

The woman went on to full term and was delivered normally without any complication whatever, of a living child. To-day, October 17, 1895, the patient is well and strong, is able to do her housework and be about without any difficulty whatever.

She complains at times of a little pain in the right side of the abdomen.

This case is of interest for the following reasons:

1. From the point of view of diagnosis. It was unusual to find bile pigment in a cyst of the kidney, and it opened the question whether it were possible that there was present on the *left* side a gall-bladder.

2. This tumor occurring in a movable kidney would make one suspicious of all movable kidneys. May they not be more often the seat of pathological lesions than is commonly supposed?

3. The operation was undertaken in spite of the presence of pregnancy, and it did not interfere with the remainder of the pregnancy.

4. The presence of sugar was determined in the urine immediately after the operation, which subsequently disappeared. The cause of its presence is unknown.

5. The detection of tubercle bacilli in the urine makes the subsequent course of this case extremely interesting. At the last examination a few months ago, there were no tubercle bacilli present.[1]

6. The ligature placed about the pedicle included all vessels and the ureter. There was no separate ligature of vessels, which would seem in most cases to be advisable.

7. Closing the abdominal cavity by suture of the peritoneum before enucleating the cyst is certainly of value in preventing soiling of the peritoneum and protrusion of the bowel.

8. It was proposed at the time to excise the tumor from the kidney, as the kidney was found to be so largely uninvolved by the growth. It seemed a typical case for such operation, but it was thought wiser, for fear of the malignant nature of the growth, to do the complete operation.

9. A complete quantitative analysis of the urine following the operation of nephrectomy is unusual and valuable.

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[1] The smegma bacillus is sometimes mistaken for the tubercle bacillus, and until the differential stain is followed up with care it will be wise to withhold judgment as to any prognosis based on the presence of the tubercle bacillus.

10. That one kidney can be removed during pregnancy without any disturbance is an important demonstration.

PATHOLOGICAL REPORT BY DR. W. F. WHITNEY.

The mass removed consisted of a kidney, directly continuous with the inferior or lower end of which was a flattened oval tumor of about the same length as the kidney and twice as thick. The capsule of the kidney passed over on to this and was lost in its covering. A longitudinal section through the whole showed the kidney for its greater part intact, quite sharply differentiated from the tumor, at first glance; but on closer examination could be seen to be thinned out and gradually blended with it.

The section surface of the growth was of an opaque yellow color, somewhat lobulated and finely shaggy.

The little projections being more or less branched and finely nodular. It was not compact, but spongy in texture; the cavities were minute.

Microscopic examination showed the kidney substance proper separated from the tumor by a line of connective tissue of varying width in which the tubes and Malpighian bodies were hardly to be recognized. In one place, however, these structures could be followed directly to the growth, and one proliferating glomulus was found separated by only a fine line of connective tissue from it.

On the edge of the growth it was found to be made up of small cystic cavities lined with a low epithelium, and in their general aspect recalled the kidney tubules.

These soon underwent a degeneration into some hyaline substance (not stained by ordinary reagents) which separated the fibrous septa more or less completely. And it was the remains of these septa which appeared as the shaggy projections on the cut surface.

The growth is to be classed as a cystic adenoma of the kidney, with a tendency to a partial hyaline degeneration of the contents.

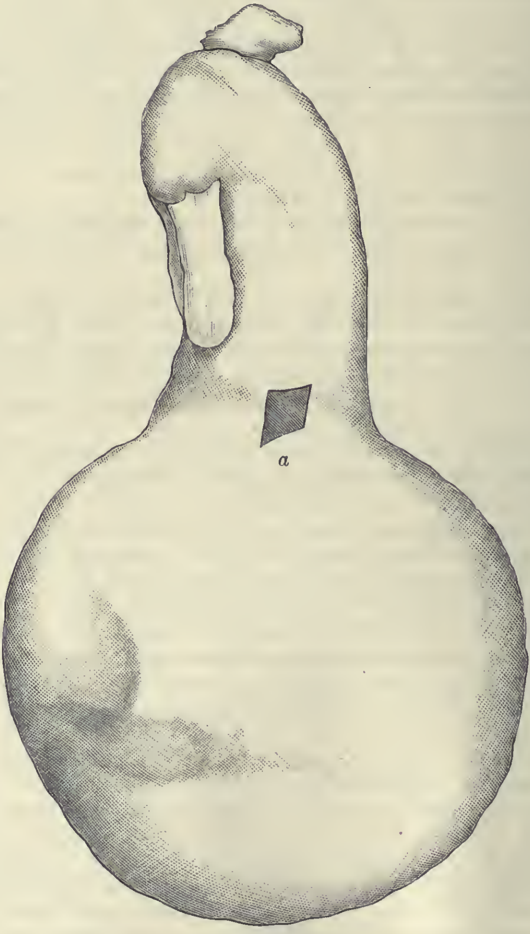
Analysis of Urine, April 4, 1894. Amount in 24°, 810 c.cm.; color, very high; specific gravity, 1019; reaction, acid; sediment, much; Uph., N. Cl. N. E. P. +; ind., Sl. + U — M. + A. P. N.; albumin, very slight trace; sugar, very slight trace; sediment, chiefly H_2U, considerable number hyaline casts, small and medium diameter, and many with blood and renal epithelium adherent, little free blood and renal epithelium; quantity, U+2.24 per cent.=20.445 grammes.

April 7*th*. Color, very high; specific gravity, 1018; sediment, considerable; reaction, acid; sugar, absent; sediment, few leucocytes and renal cells, an occasional blood globule, few hyaline casts, mostly small and with few renal cells and blood globules attached, few casts of medium and large diameter, uric acid crystals; amount of urine, 700 c.cm.; urea, 2.4 per cent.=16.8 grammes.

12*th*. Color, high; specific gravity, 1016; sediment, considerable; reaction, acid; uph., N. U + N. Cl. N. E. P. N.; ind., N. U — Sf. A. P. N.; albumin, slightest possible trace; sugar, absent; sediment, chiefly leucocytes and vaginal cells, few blood globules and renal cells, an occasional hyaline and granular cast of small diameter and with blood and renal cells adherent; quant. est., U + 1.955 per cent.= 18.475; quantity for 24°, 945 c.cm.

20th. Color, normal; specific gravity, 1014; sediment, considerable; reaction, acid; uph., U + Sl. Cl. N. E. P.; ind., U — Sf. A. P. N.; albumin, slighest possible trace; sediment, chiefly vaginal epithelium and pus, occasional blood globule, occasional small hyaline cast; quantity in 24°, 1090 c.cm.; quantity U + 1.455 per cent.=15.859 grammes.

FIG. 1.



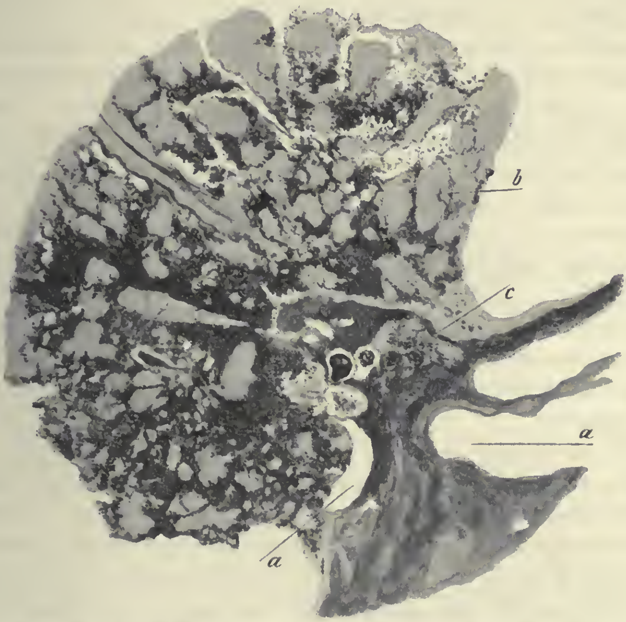
Kidney and tumor removed from pregnant woman. Relative size shown.
a. Piece removed for microscopical examination.

28th. Color, pale; specific gravity, 1022; sediment, much; reaction, acid; albumin, slightest possible trace; sediment, much pus, a little blood, and few squamous epithelial cells; 1231 c.cm. total urine; quantity, U + 1.13 per cent.=13.9 grammes.

There is a good deal of pus. It has increased very much since last examination. It does not appear to be all vaginal. I cannot eliminate a pyelitis. I think my assistant must have made an error in the urea estimate. I have always examined the sediment myself.

May 4th. Color, normal; specific gravity, 1013; sediment, considerable; reaction, acid; uph., U + Sl. Cl. N. E. P.; ind., N. U — Sf. A. P.; albumin, slightest possible trace; sediment, very little pus and vaginal epithelium, very few blood globules, an occasional small hyaline cast (much less pus than before, U + 1.195 per cent.); amount of urine, 936 c.cm.

FIG. 2.



Microscopic section at junction of kidney and new growth, showing cysts (*a*), and hyaline degeneration (*b*), with a glandular structure in places preserved (*c*).

June 8th. Color, normal; specific gravity, 1014 sediment, much; reaction, acid; albumin, slight trace; bile pigments, absent; sugar, absent; sediment, excess of squamous epithelium, considerable pus, free and in clumps, many medium and small-sized cells, most of which are fatty, few abnormal blood globules, an occasional hyaline and granular cast; quantity of urine 1780 c.cm.; quantity of urea, 20.118 grammes; very numerous *tubercle bacilli* detected in sediment.

August 8th. Color, normal; specific gravity, 1011; sediment, much; reaction, acid; albumin, very slight trace; bile pigments, absent; sugar, absent; sediment, excess of squamous epithelium, few pus and blood corpuscles, no casts detected; urea, 1.01 per cent.; amount urine received, 475 c.cm.; numerous colonies of tubercle bacilli.

189 BEACON STREET, BOSTON, MASS

INFANTILE SCURVY FROM STERILIZED MILK.

By Louis Starr, M.D.,
PHILADELPHIA.

Sterilization of milk, or, in other words, its prolonged subjection, under pressure, to a temperature above the boiling point of water, while undoubtedly a process of great value, is neither so universally applicable in the preparation of food for infants nor so free from disadvantages as was supposed at the time of its original introduction. The same prolonged and intense heating that destroys the bacteria in the fluid and prevents its acting as a medium in transmitting zymotic diseases, that adapts it to the treatment of various gastro-intestinal disorders, and that preserves it for a long time in an aseptic and administrable condition, produces changes in certain constituent elements of the milk that interfere with its easy digestion, and in this way make it a less perfect and nutritive food. These changes occur especially in the lactalbumin, which has its solubility diminished, and in the fat globules, which are made to coalesce with each other and with some of the insoluble albuminous matter.[1]

Among artificially fed infants, particularly those belonging to the wealthier classes, where the surroundings are most favorable and the supply of cow's milk as nearly perfect as possible, one encounters cases of malnutrition verging even upon simple atrophy, which are due solely to sterilization of the food, a fact readily established by the rapid improvement following the use of identically the same milk mixtures either Pasteurized or untreated by heat. In my opinion the alterations produced in cow's milk by sterilization may also lead to the development of the complex of symptoms known as infantile scurvy, but as this point has been disputed it is a matter of interest and importance to place upon record the following cases that have come under my personal observation during the past two years.

Walter, the child of a clergyman living in an excellent house at Chestnut Hill, one of the healthiest suburbs of Philadelphia, was seen in consultation with Dr. R. H. Bolling. The little patient's parents were perfectly healthy, as were also several older brothers and sisters. He had been fed artificially from birth, the food being a mixture of sterilized milk and water in the proportion, at first, of one-third, then one-half, and next two-thirds, with two teaspoonfuls and a half of cream and one teaspoonful of sugar to each six-ounce bottle. He apparently thrived until the age of eight months, when the symptoms of scurvy appeared; namely, spongy and bleeding gums, pain in and immobility of the legs, and some swelling above the knee- and ankle-joints.

At the date of my visit, about three weeks after the beginning of the attack, the infant, while pale, was sufficiently well grown and fleshy; four teeth were cut and there were absolutely no symptoms of rickets. Both legs were passive, but not in the least paralytic. Picking up the child or any attempt at moving or palpating the limbs caused violent screaming. There was slight fusiform swelling at the lower third of each thigh and above each ankle; these regions were extremely tender to the touch, but the skin was normal in appearance. The gum in proximity to the erupted teeth was greatly swollen, overlapped the teeth, bled upon the slightest touch, and was livid-purple in hue. The appetite was fairly good, the bowels were regular, and beyond restlessness, fretfulness, and disturbed sleep there were no further symptoms of illness.

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[1] Leeds: American Text-book of the Diseases of Children, p. 48.

The treatment adopted was discontinuance of sterilization without alteration in the composition of the milk food, the administration of a teaspoonful of orange juice and the same quantity of raw beef juice three times daily and small doses of citrate of iron. Result, complete recovery in a little over three weeks.

Donald, a second child, born of healthy parents and in comfortable surroundings, presented the first symptoms of scurvy at the age of ten months. The first child has succumbed to a chronic wasting disease (probably tubercular), and this little patient had been carried through the earlier months of his life only by the skilful care of Dr. W. A. Carey, by whom I was called in consultation, and to whom I am indebted for the clinical notes.

He had been bottle-fed from the first week after birth. Up to the fourth month a condensed-milk mixture was employed; then he was placed upon a sterilized mixture of cow's milk, cream, lime-water, and sugar of milk. At the date of onset of the scorbutic symptoms he was taking, every three hours, a sterilized food composed of the above ingredients in the following proportions: Cream, f℥iss; milk, f℥j; water, f℥iij; lime-water, f℥ss; sugar of milk, ʒj. The initial symptoms were fretfulness, disturbed sleep, slight feverishness, and violent paroxysms of crying when picked up in the arms, or when the legs were moved, or pressure made about the hips or knee-joints. These joints were not perceptibly swollen nor was there redness or other discoloration of the surface. The gums, however, of both the upper and lower jaw in the neighborhood of the two lower and four upper incisors, which were well advanced, were swollen and of a "deep raw-meat color." This discoloration decreased after a short time to a purplish line limited to the margin of the gums.

At the time of the consultation, about ten weeks after the beginning of the attack, there was little change in the symptoms. The child was moderately well nourished considering the difficulty that had been experienced in feeding him throughout his life. Dentition was normally advanced and there were no rachitic manifestations. The margins of the gums corresponding to the teeth that were cut were moderately swollen and distinctly purple in color. There was marked pain on moving the legs, tenderness on handling the hip and knee-joints, and a slight swelling above each knee. The tongue was quite clean, the appetite fairly good, and the bowel action regular. Physical examination of the chest and abdomen gave negative results. The urine was high-colored, but otherwise normal.

In treating the case no change was made in the composition of the food, but Pasteurization was substituted for sterilization in its preparation, and in addition two teaspoonfuls of raw beef juice and from one to two teaspoonfuls of orange juice were ordered every four hours.

The patient began to improve immediately, eating better, gaining in weight, and sleeping well. All scorbutic symptoms disappeared in less than three weeks.

Elizabeth, the third child of healthy, well-to do parents, living in the country, exhibited the first symptoms of scurvy at the age of seven months. Her brother and sister were delicate, the latter especially having suffered from several severe attacks of gastro-intestinal disorder. The little patient herself had never been robust, and her feeding—artificial by necessity from birth—had been difficult to manage. For the first five months the food employed was a sterilized mixture consisting of milk, four parts; cream, six parts; water, twenty parts; lime-water, two parts, and milk sugar. On this she gained flesh and strength so slowly that a gradual increase in the proportion of milk was attempted, but, as disturbed digestion immediately ensued, no further efforts were made in this direction. Mellin's food was then added with no better results.

At seven months a slight decrease in the activity of the leg movements was observed. Then pain, evinced by crying, was noticed on moving the limbs; this gradually increased until the slightest movement or touch caused suffering. The parts in the neighborhood of both knees and the left ankle were the most tender, though there was no swelling, heat, nor redness of the skin. These symptoms improved under the use of tonics and salicylate of sodium, to return again shortly after, with the impaired digestion and general debility which followed in the wake of a moderately severe attack of measles. Again the tonic treatment was resorted to with success, but, the digestive powers remaining very feeble, it was found impossible to administer food (sterilized) of proper nutritive strength, and the painful condition of the legs soon reappeared.

It was in this stage of the case, after a course extending nearly three months, during which sterilization had been constantly employed in the preparation of the food, that I saw the patient through the kindness of Dr. Joseph Stokes, of Moorestown, N. J., to whom I am indebted for the above clinical data. The child was pale, poorly nourished, and feeble. The appetite was poor; the bowels were in fairly good condition, though an occasional evacuation showed mucus and undigested milk curds. The tongue was lightly coated, and the gums, at the position of the two lower incisors, which were thoroughly advanced, were swollen and purple in color. Both legs were passive; attempts at movement caused severe pain, and pressure above the knee- and ankle-joints showed extreme tenderness. There was no swelling, and neither heat nor discoloration of the surface. Examination of the heart, lungs, and abdomen gave negative results, and the urine was normal. There were no indication of rickets.

Immediate discontinuance of sterilization was recommended, and the child was ordered a partially pre-digested food, composed of cream, one-half fluidounce; milk and water, each three fluidounces; peptogenic milk-powder, one drachm. In addition to this, one teaspoonful of raw beef-juice and a bitter tonic were given three times daily.

The scorbutic symptoms disappeared rapidly, there was a corresponding gain in general strength and digestive power, and in a few weeks the patient was well.

Not to go further into detail, I have seen in consultation during the past eighteen months five cases of scurvy in children aged eighteen, twenty, twenty-two, sixteen, and fourteen months, respectively, which illustrate the etiological point in question. In each of these cases the food was properly proportioned and had for its basis sound cow's milk, but sterilization had been uniformly employed in its preparation. All recovered rapidly upon the same food unsterilized, with the addition of a small quantity of raw beef-juice and orange juice to the diet.

CRANIOTOMY FOR EPILEPSY AND ALLIED CONDITIONS.[1]

By R. J. Hall, M.D.,
of Santa Barbara, Cal.

The term used in this paper is craniotomy, and not craniectomy, as usually printed. Craniectomy, which would mean excision of the skull, seems to me ill-chosen.

I have the following six cases of craniotomy to report:

Osteoplastic resection of skull for epilepsy. Daphne S., aged two years and seven months. July 19, 1893. June, 1892, while running across room fell, striking right side of head against wooden edge of sofa; was unconscious for some hours, then violent general convulsions all night; after convulsions left hemiplegia, which gradually disappeared.

June 7, 1893. Well-nourished child; speaks only one or two words; paresis of left hand and forearm, and weakness of left leg. Mother reports that two to five times daily child, while playing, will stop suddenly, eyes become fixed, head turn to one side (which side not noticed), have spasm of left arm, usually continue playing without paying attention; sometimes fall down. Ordered antipyrine, gr. vi., in two doses, taken in the morning. After two weeks, no improvement occurring, ordered sod. brom., gr. x., in two doses, as before.

July 17th. Mother reports no improvement; spasms more frequent and violent; child more often falls during spasms, and cries after them.

Operation, July 19th, Drs. Otto, Cavel, H. and Ida Stambach assisting. Chloroform; usual aseptic precautions. Fissure of Rolando and motor area of left arm determined by Chiene's method. Tongue-shaped flap over motor area of left arm, with base downward, including scalp and bone turned down; no adhesion of dura mater; no pulsation on exposure of dura mater; incised dura mater, which was much thickened, when organized clot (œdematous) about $\frac{1}{8}$ inch thick found, closely connected with pia mater; bone cut away in direction upward and forward to determine extent of clot for distance of about $\frac{1}{2}$ inch; much serum exuded from œdematous pia mater on scarification; dura mater sutured loosely with interrupted catgut suture; continuous catgut suture of scalp-bone, which had entirely separated, being replaced; iodoform and aseptic gauze dressing; 6 P.M., temperature, 99°; pulse, 120; general condition good.

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[1] Read before the Southern California Medical Association, Los Angeles, June 5, 1895.

December 30th. Dressing removed two weeks after operation no general or local reaction having followed, except slight rise of temperature (patient being up on third day), wound healed *per primam*, and bone solid. Night after operation two slight attacks, but none since, and weakness of left arm almost disappeared, and restlessness and nervousness greatly diminished.

May 27, 1895. Paresis of arm and leg rapidly disappeared, and the child learned to talk. During first year after operation, twice during attacks of acute indigestion, had a single convulsion, but of entirely different character to those formerly seen. Is still abnormally restless, and while running about occasional "jerks" are observed. Otherwise cured.

Osteoplastic resection of skull for epilepsy. P., aged twenty-six years; American; single. December 9, 1893. Family history good. When four years old fell, causing scalp wound in left parietal region. Physician put in one suture. Said to have expressed fear of compression of brain. Continued healthy until age of seventeen. Since that time has been subject to epileptic fits. Patient and (adopted) mother state that fits occur about every eight or nine days, but friends state that attacks are much more frequent, patient often not realizing that he has had one. Before an attack the patient states that he has a sense of "heat" passing upward from abdomen, through the chest to the head. This is followed by general convulsions, with unconsciousness, followed by stupor.

On examination general good health; mind clear, but somewhat childish. In left parietal region is a scar about two and one-half inches in length, commencing about one inch below the vertex, passing obliquely downward and backward, About middle of this cicatrix; scalp firmly adherent to bone, and distinct depression of bone.

Operation. Ether; usual aseptic precautions; trephining over seat of depression; horseshoe incision with base downward. Portion of bone, about two and one-half by two inches, cut out with chisel and mallet; base left adherent to periosteum. Scalp found firmly adherent to bone, and dura mater to inferior surface of bone. Skull thickened on internal surface, corresponding to depression; no other change; dura opened. Brain protrudes rather more than usual; otherwise normal. Dura closed by three catgut sutures. Sheet of gold leaf interposed between dura and bone. Bone replaced. Scalp wound closed by continuous catgut sutures. Aseptic gauze and cotton dressing.

December 14th. Slight rise in temperature every evening since operation (highest $101.\frac{8}{10}$°), but otherwise condition good. Had two convulsions on the night following operation, but none since.

30th. Dressing removed two weeks after operation. Complete *per primam* union, and bone solid. Had slight convulsion twelve and thirteen days after operation during night, and a very mild one on December 28th. After first ordered sod. brom., gr. xc., at night and in three doses.

June 2, 1894. Cultures from scalp showed staphylococcus pyogenes albus.

May 27, 1895. Patient has mild convulsions at intervals of three weeks to a month. Says they do not last so long, and are not followed by stupor, as before. Mental condition much improved—apparently normal.

Jacksonian epilepsy with mental aura; trephining. Rosa T., aged eight years; American. February 1, 1894. Child has had strabismus since birth. Family history good. When fourteen months old had attack of what was probably cerebro-spinal meningitis, with apparently complete recovery. At age of three years fell backward from balcony, some six to eight feet, striking left side of head on a pile of bricks. Scalp wound of left parietal region, which healed readily. About four months later commenced to have attacks of following character. When seeming perfectly well child would become apparently insane, commence to scream violently, and strike at any one near. Attacks usually accompanied by spasmodic contractions of left, sometimes of both arms; usually ceased when child was held and spoken to severely. Attacks generally followed by unconsciousness or semi-stupor, lasting a few minutes to several hours. Frequently complete aphasia, lasting several hours after attack; if not, always indistinctness of speech ("tongue seemed thick"), and mental confusion or condition of apparent insanity. Attacks occurred both by day and night, during sleep or waking, without apparent exciting cause, sometimes five or six times in twenty-four hours, sometimes only two or three times a week. Medical treatment (by bromides, etc.), had little or no effect. General health and development good, but child, while intelligent and learning rapidly, restless, excitable, and difficult to control. Complains of constant pain, pointing to frontal, both parietal and occipital regions. Examination shows nothing abnormal, except as above, and a cicatrix of a small scalp wound not adherent to the bone in left parietal region, about half inch below estimated motor area of arm. No evidence of depression of bone. Ether; usual aseptic precautions. Omega-shaped incision of scalp, base downward, over left motor area of arm; fragment of bone one and one-half inches vertically by one inch transversely removed entirely with chisel and mallet. Dura non-adherent, normal; opened, and pia found somewhat œdematous, vessels engorged, and brain protruding more than normal. Two catgut sutures of dura. Bone not replaced. Scalp wound closed somewhat loosely by continuous catgut sutures. Iodoform crystals. Iodoform and sterilized gauze and cotton dressing.

February 2*d.* No shock or general reaction following operation. Child had two mild spasmodic attacks of usual character during night. Condition exactly same as before operation, but says pain in the head has disappeared.

6*th.* Two slight attacks night of February 2d; none since. Mother says child is much quieter and less restless than before.

14*th.* Dressing removed; complete primary union.

26*th.* When seen two days ago, mother stated that since operation child had three severe attacks and a number of premonitions not followed by attack; much quieter and less restless.

May 27, 1895. Patient has occasional attacks once in three or four weeks of similar character to those before operation, but much milder and not followed by stupor, aphasia, or insanity. Still very restless and excitable, but much less so than before, and constantly improving.

Trephining for Epilepsy. Katie K., aged twelve years and seven months; American. August 23, 1894. When about ten months old, patient had attack of left hemiplegia, without known cause; no specific history. Partially recovered from this, but at the age of two years and seven months commenced to have severe general epilectic attacks. Since that time patient has scarcely grown or developed at all. Has never learned to walk, use her hands, or speak; and though there is no apparent paralysis of tongue or muscles of mastication, child has apparently forgotten how to chew, and only swallows soft and liquid food. Passes urine and feces voluntarily, but without knowing enough to call attention beforehand. Intelligence limited to recognizing members of family and indicating hunger and thirst by putting out tongue. Has from five to twenty-five general convulsions every twenty-four hours, and requires constant attention.

Examination: Very anæmic, emaciated child, showing development of a child of four years. Paresis of muscles of both legs and arms, chiefly involving extensors, so that the hands are held in flexed position, knees flexed, and feet extended. Rhachitic deformity of chest and curvature of lower end of left tibia. Had fairly well-developed and fairly formed head, except that parietal eminences are unusually prominent and there is corresponding depression at situation of posterior fontanelle.

Ether. Usual aseptic precautions. Omega-shaped incision with base downward, over upper portion of motor centres on right side; found a thickening of bone, due to a deposit of soft cancellous bone, over a circular area, three-quarters of an inch in diameter at the upper and posterior portion of area of bone exposed. Removed with gouge and chisel an area of bone one and a half inches in diameter. Bone about half as thick again as normal, soft, and very vascular. Dura not specially adherent, but vessels much enlarged, pia adherent to dura, stripping off with it, and vessels much enlarged. Dura closed with one silk suture. Bone not replaced. Scalp wound closed with continuous silk suture, iod. crystals, iodoform gauze, and cotton dressing.

August 24th. Little evidence of shock during or after operation. While coming out of ether had three slight convulsions; none since, and condition good. Much discharge of cerebro-spinal fluid through dressing, which, however, is dry and not changed.

September 6th. Dressing removed. Complete primary union.

For about three months after operation no convulsions. Then began to have occasional attacks, but single, and not more than once in two or three weeks. Parents thought intelligence improved, but probably not. Died of unknown intercurrent disease after about seven months.

Epilepsy. Trephining. S., American, single, aged twenty-one years. April 29, 1894. Family history good. Was well developed and healthy, except for one or two convulsions as baby, until three years of age. At that time had mild attack of diphtheria. From that time on commenced to have epileptic convulsions; mental development almost ceased and growth was greatly retarded. Has never learned to speak more than a few words, is entirely childish, and takes little notice of surroundings. Recognizes a few persons, but slowly, and with difficulty. Has to be fed, and can only take soft food, having apparently not learned to chew; walks feebly, and generally with support, but no paralysis. If watched carefully, will indicate when she desires to pass water or have movement of bowels.

Menstruation began about the age of fifteen, and normal since. Appetite good, sleeps well, and bowels regular. Had general epileptic convulsions after diphtheria; at first, as many as sixty a day; has taken almost constantly large doses of bromides, and convulsions have diminished to about five or six in twenty-four hours, occurring day and night.

Examination: Feeble, excessively anæmic and rather emaciated, having the appearance and development of a girl of fourteen. Mental condition as above. Used as a child to complain of unpleasant feeling in the stomach before an attack.

Operation. Right side of head shaved and whole head close clipped. Usual aseptic precautions. Ether. Trephined on right side, in upper portion of motor area directly over fissure of Rolando, using mallet, gouge, and chisel. Removed an oval piece of bone about two and a half inches vertically and one and a half inches transversely. Found skull very much thickened, about twice normal extent. Dura normal, not adherent. Dura opened, marked congestion of pia mater. Dura replaced with catgut suture. Bone not replaced; scalp loosely sutured with continuous catgut suture to allow drainage, iodof. crystals, iodoform gauze, sterilized gauze, and cotton dressing.

April 30*th.* No shock; three slight convulsions during night and forenoon. Free escape of stained cerebro-spinal fluid, wetting dressings. Covered with iodoform gauze and bandage.

May 15*th.* Dressings removed. Complete primary union. During stay in hospital patient has been very well and has gained flesh and become less anæmic. Has had a very few slight convulsions, but without losing consciousness.

28*th.* Patient was removed to her home May 16th. Parents state that she was much brighter, recognizing people more readily, and connecting words in sentences, which she had never done before, and having only one or two very slight convulsions. Am informed that yesterday, without known cause, patient commenced to have violent convulsions, recurring every ten minutes, and died that evening. No autopsy.

Craniotomy for Idiocy. Dora P., aged twenty-five months; California. Birth normal, no instruments being used. Was fed on mother's milk until three months old, then cow's milk. She was bright and well until she was ten month's old, when she had a severe illness, lasting one week. Fever, vomiting, and purging were marked, and a diagnosis of cholera infantum was made by the attending physician. After this illness the fontanelles, which had previously been open, closed rapidly, and the child has never shown the slightest intelligence since, does not recognize any of the family, or take any notice of anything. She has never tried to crawl or speak, and her only voluntary action is sucking. Ever since the illness mentioned she has had nocturnal epilepsy, sometimes three fits in one night, and nearly always one. During the day she has attacks of "jerking" all over every few minutes; does not lose consciousness, but sometimes cries. She has inco-ordination, but no paralysis; knee and ankle reflexes normal. The head is large, the back being well developed, but in the frontal and parietal regions it is greatly contracted.

Operation, March 16*th.* Usual preparations and aseptic precautions. Ether. Left side of head operated upon. Pressure was made by an assistant over the temporal artery, thus controlling the bleeding. A large horseshoe-shaped incision was made, beginning one inch from the outer angle of the eye, embracing the posterior one-third of frontal and anterior two-thirds of parietal regions, and being carried around to a point one-half inch anterior to and on a level with the top of the ear. thus leaving a pedicle one inch wide, containing the temporal artery, The highest part of the incision was within three fourths of an inch of the sagittal suture. The periosteum was removed from the bone in the line of the incision for a space one-third of an inch wide, and the bone was then removed to the same extent. In removing the bone a mallet and chisel were used to make the first opening down to the dura, and the bone was then rapidly cut away with the rongeur forceps. The piece of bone left under the skin-flap was fractured under the pedicle, causing it to stand out, and leaving more room for expansion of the brain. The patient being in good condition, a linear craniotomy was then done, extending from the posterior superior part of the former one to within one-fourth of an inch of the occipital protuberance. The entire wound was then closed with a continuous suture of fine black silk, the stitches not being drawn tight. A dressing of idoform gauze, gauze roller, and cotton, and a starch bandage were applied. The whole operation was completed in forty minutes.

April 2*d*. The night of the operation the patient's temperature rose to 105°, but subsided the next day, and has been normal ever since. There was complete primary union in the wound. There have been no convulsions or jerking spells since. The mother and nurses think the child shows increased intelligence. Right side of head operated on in precisely the same manner to-day. Operation completed in twenty minutes.

3*d*. No local or general reaction.

13*th*. Stitches removed from wound on right side of head to-day, complete primary union. No attack since first operation.

15*th*. Discharged.

Of these, the first five belong to the class of simple trephining for epilepsy, an operation long known and practised, but with very indefinite indications. Of these, one, the first, in which the epilepsy was complicated by aphasia and paresis of one arm and leg, may be considered, I think, as cured. The second, third, and fourth, as greatly improved. While the fifth died several weeks after operation, probably from exhaustion due to convulsions following each other almost without intermission during several hours. As she had frequently had as many as sixty convulsions in one day before this, it is hard to say how much the operation had to do with the fatal result.

In all, an omega-shaped flap was formed with the base downward, about two and a half by two inches in diameter, and the bone rapidly cut out with gouge, chisel, and mallet. In only two cases was the bone replaced, after having become completely separated from the flap during the operation. In all the dura mater was opened to observe the condition of the brain, and then replaced; the wound was closed without drainage, and healed *per primam* under one dressing. No shock or other unpleasant symptoms followed in any case. I would urge that the operation may be done purely empirically, in all cases where the epileptic seizures are so frequent and violent as to make them a constant source of danger, anxiety, and care to the family of the patient, and where medicinal agents fail to relieve. Further, in cases of traumatic origin, where there there are indications of injury to some portion of the skull or brain; and, lastly the best recognized indication of all, in Jacksonian epilepsy, where symptoms, motor, sensory, or psychical, indicate that a definite portion of the cortex is diseased. In traumatic cases it is probably best to follow the suggestion of Starr (*Brain Surgery*, p. 26), that "when the injury and the localizing symptoms do not coincide, it is better to follow the localizing symptoms rather than the surgical injury." In localizable epilepsy, Horsley's method may be followed of excising any portion of the cortex which can macroscopically be seen to be diseased, or excising the cortical centre, which, on the application of a weak faradic current, is found to be the starting point of a convulsion. The resulting paralysis may be permanent or temporary. Objection has been made to this that the resulting brain cicatrix will probably form the starting point for new attacks. It seems, however, hardly probable that a healthy cicatrix should be as serious a cause of irritation as softened and diseased tissue, when, however, no macroscopic evidence of disease is found, Starr advises not to excise. The statistics of the results of trephining for epilepsy are given so fully by Starr in his admirable monograph on brain surgery, already referred to, that I will not detain you with them now.

My sixth, and in some respects most interesting case, is the only one strictly belonging to the class for which the operation of craniectomy or craniotomy was suggested by Fuller (1878), Lane (1888), and Gueniot (1889), but first performed by Lannelongue, and described by him in 1890, an operation "intended to facilitate the expansion of the brain, and, in consequence, the development of the intellectual faculties in microcephalics whose skulls are prematurely ossified, and in the most diverse intra-cranial lesions, hæmatemata, serous cyst, pachymeningitis externa, cerebral sclerosis, limited or diffused." It is true that two of the preceding five operations were performed on idiots, but only with the hope of diminishing the frequency and severity of their epileptic attacks, as their ages (twelve and twenty-one, respectively) made any intellectual improvement hopeless. Lannelongue's operation was received at first with much enthusiasm, but, as is usual, a reaction occurred. A number of deaths were reported, directly due to the operation, and numerous other cases in which the patient survived the operation, but no improvement followed. Perhaps the hardest blow of all was struck by Abraham Jacobi, at the International Congress in Rome, 1894, when he stated that he had collected thirty-three cases of craniotomy for idiocy and microcephalus, and found that the results were always negative, and that a skull in Sach's possession proved the existence of a contraction rather than enlargement of the cranium, as the result of operation. As a result of these causes, the operation has been almost abandoned in France and England, is strongly condemned in Germany, while American surgeons are, I think, inclined to regard it as dangerous, unscientific, and useless.

To meet these objections and to show that the operation is in certain cases both reasonably safe and justifiable is the chief object of this paper.

The first and most serious objection urged is that the imbecility, epilepsy, and the abnormal conditions observed in microcephalics are due to organic disease of the brain, the cranial synostosis being merely secondary, and that these conditions cannot be benefited by operation. This question has been very thoroughly studied by Starr, to whose monograph I must again refer. He divides the cases of imbecility, in which the question of trephining arise, into three clinical groups; the description of which would occupy too much time. In regard to the pathological conditions present in these three groups, he states that "the lesions found are various in type, in origin, and in situation, but . . . first, that the difference in the clinical types is due to the varying situation of the lesion, rather than to its varying nature. Secondly, that the various processes of disease have, as a fairly uniform result, a condition of atrophy with sclerosis of the brain, which we may term sclerotic atrophy." Finally, he concludes that many of the conditions described are clearly such as to be unaffected by operation, but that, "on the other hand, there are conditions, such as mal-development of the cortex without gross lesion, in which it is possible that anything which may stimulate latent powers of growth or may remove those influences which interfere with development might result in improvement," especially as "the brain is capable of growth and development until the age of twenty, if not longer." As it is impossible to determine the actual pathological condition before operation, we must fall back on clinical experience as a guide. Let us see then what clinical experience teaches. We have already learned that Jacobi collected 33 cases in which no benefit resulted. Lannelongue stated at the French Congress of Surgery, 1891, that he had operated 25 times, with but one fatal result, and that the patients improved after the operation. His statement is too indefinite to allow of any conclusion. Starr gives in detail 34 cases, with 14 deaths and 13 improved, or greatly improved. C. Beck, "Craniectomie (Lannelongue's operation) für Microcephalie und Idiotie" (*Prager med. Wochenschrift*, 1894, No. 39–45. Ref. *Centralblatt für Chirurgie*, No. 10, 1895), has collected 72 cases, with a mortality of 17 per cent. In the remaining cases the results were as follows:

	Cases.
I. Complete, permanent improvement	16
II. Complete, improvement, with slight progress later	4
III. Slight improvement, which slowly progresses .	1
IV. No improvement	1
V. Worse	11
VI. No improvement, or reported too soon . . .	27

While these results are not brilliant, we must remember that the conditions for which the operation is performed are otherwise entirely hopeless—the patients being a burden to themselves and to the community, and that even one success among a great many failures would justify the operation.

FIG. 1.

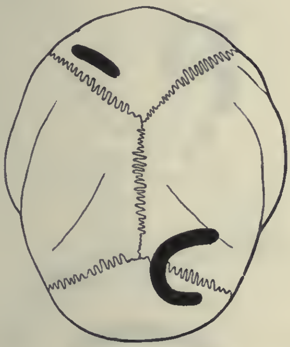


FIG. 2.

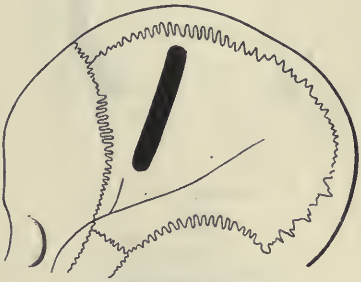


FIG. 3.

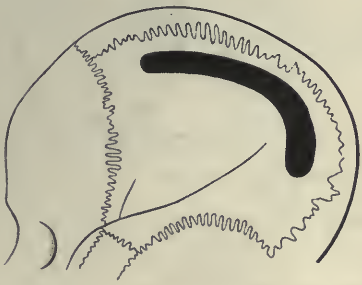


Fig. 4.

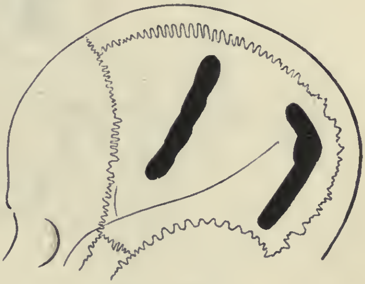


FIG. 5.

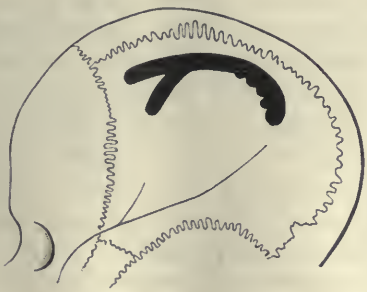
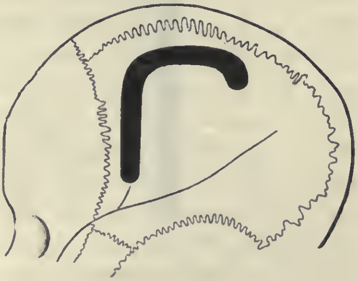


FIG. 6.



The next most important objection is that the operation does not actually increase the capacity of the skull, or even, as Jacobi tries to show, that it actually diminishes it. I think that this objection is justified by the character of the operations which have usually been performed. By linear craniotomy most surgeons understand an operation consisting in the excision of a strip of bone, a quarter to a third of an inch in width, extending from before backward, on one or both sides of the median line. But a glance at the architecture of the skull will convince anyone that such an operation is little calculated to increase

Fig. 7.

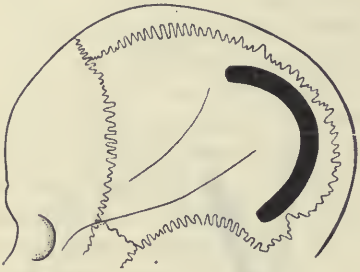


Fig. 8.

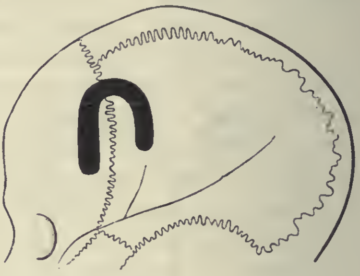


Fig. 9.

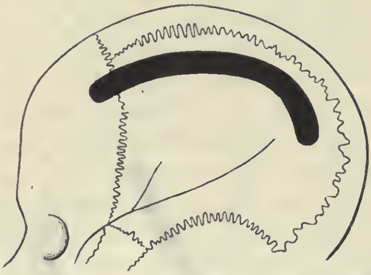
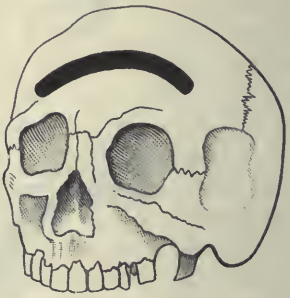
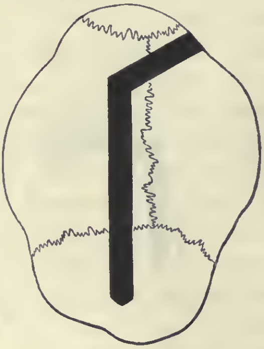


Fig. 10.



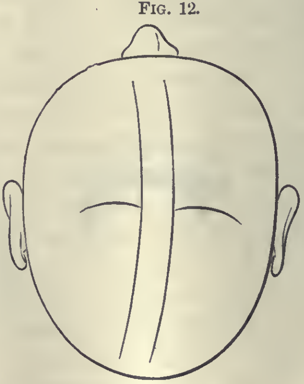
Figs. 1–10. Operative procedures of Lannelongue.

Fig. 11.



Operation of Wyeth

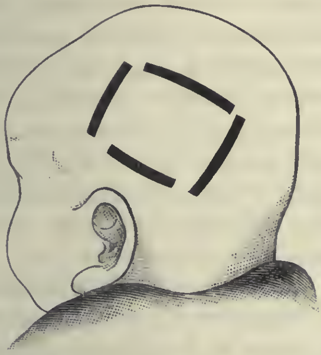
Fig. 12.



Operation of Postempski.

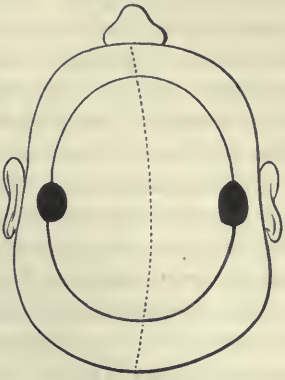
the capacity of the skull. As may be seen from the accompanying diagrams, taken from Dr. A. Chipault's encyclopedic work, *Chirurgie Opératoire du Système Nerveux*, vol. i., most of Lannelongue's operations, "à lambeaux," as he calls them, accomplish even less than this. The only two operative procedures hitherto practised which seem to me in any way to meet the indications are those of Wyeth (*Medical Record*, February 21, 1891, p. 232), (Diagram No. 12); and Dumont (*Correspondenzblatt für Schweizer Aertzte*, 1893, No. 23, p. 778. Rev. in *The Medical News*, January 13, 1894, p. 48), (Diagram No. 14), and in the first of these cases practically a complete cure resulted, while in the second the improvement was very great. Both operations, however, have been very generally condemned on account of the severity of the operative procedures, to which most patients would probably succumb. It was to obviate these difficulties that I devised the operation already described. The formation of the two anterior skin- and bone-flaps rendered the operation by compression of the temporal arteries, until clamps had been applied, almost bloodless. By operating on one side

FIG. 13.



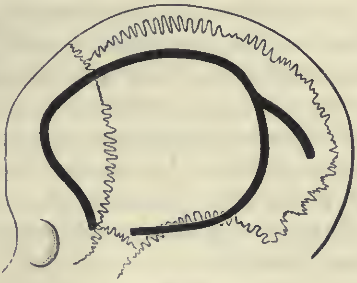
Operation of Dumont. (From CHIPAULT.)

FIG. 14.



Operation of Jabouloy.

FIG. 15.



Operation of the Author.

first and on the second after an interval of two weeks, the danger of shock was greatly diminished. In my case, as only the anterior portion of the head was microcephalic, it seemed sufficient to cut out flaps in this region, but otherwise I should not hesitate to extend the operation to the posterior half instead of a simple linear craniotomy. I may mention that the mode of operation which I employed (making a small opening with gauge, chisel, and mallet), and cutting out the strip of bone with "rongeur" forceps, proved entirely satisfactory—the first operation occupying forty minutes and the second only twenty. With regard to the final result of the operation it is, of course, too early to make any statement, but a report just received (June 26, 1895) from the mother states that the child has learned to say mamma and papa, is learning to walk, though slowly, plays with toys, and shows in other ways steady improvement. There have been no convulsions.

It would be easy for me to give an extensive bibliography of the authors consulted in preparing this paper, but the work has been so thoroughly done by Starr (*Brain Surgery*), Dr. A. Chipault (*Chirurgie Opératoire Système Nerveux*), and C. Beck, already mentioned, that I shall content myself by referring those interested to these authors.

October 9, 1895. In regard to Case VI., Dora P., I have just learned from the mother that the child has learned to walk and talk and shows constantly increasing intelligence. Dr. Comstock, the attending physician, reports that the result has surpassed his most sanguine hopes. I have, since then, performed a similar but much more extensive operation in a case of microcephalus, with complete idiocy, aged eight years. There has been little if any improvement in the mental condition, but the entire absence of any local or general results indicates that the operation is almost free from danger.

CHRONIC DYSPEPSIA IN CHILDREN.

By J. Walter Carr, M.D., M.R.C.P. Lond., F.R.C.S. Eng.,
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Everyone recognizes dyspepsia in adults in its protean and omnipresent forms, every medical man knows its importance in infancy in association with errors of diet, but between these two periods of life is one in which its frequency and the varied symptoms it produces are perhaps less commonly realized, although possibly it is hardly less prevalent than in adult life, and scarcely less important than in infancy. Childhood—especially boyhood—is a period when the digestive and assimilative powers are supposed to be at their maximum, when the capacity for taking food—and even that which can hardly be termed food—with impunity, seems to be almost unlimited, or when at most a sharp but transient attack of gastritis or gastro-enteritis, with pain, diarahœa, and vomiting, seems to be the only penalty for even the most apparently outrageous violations of the ordinary laws of digestion. True, during the stage of rapid growth and development, the ingestion of a large quantity of nourishment is essential, and digestion and assimilation must needs go hand in hand with appetite, but because the functional activity of the alimentary canal is great, it does not follow that its work must always be properly performed in face of all difficulties; nay, rather, the more active the digestive mechanism, the more readily are those activities deranged, just as a rapidly moving body will be turned by an obstacle further from its course than a slowly moving one; or just as a complicated machine, capable of a great output of work, may be more easily and seriously damaged by a slight injury than a less efficient but simpler instrument.

We need, moreover, to recollect that digestive disturbances must necessarily be more important in their consequences during childhood—the period of development—than in adult life, for in the latter case adequate repair is alone interfered with; in the former, not repair only, but also growth. In fact, the activity of the process in early life is a measure of the harm likely to result from any interference with it. In adults, dyspepsia is a frequent result of overfeeding and may be a natural protection from more serious consequences; how many pay in gout the penalty for too good a digestion? In children, on the other hand, excessive feeding is rarely a cause of much harm, the punishment instead of being deferred comes at once, and an acute attack of vomiting is the usual penalty for and cure of a surfeit; improper food is more likely to be the cause of chronic digestive trouble, and there is no compensation for the resultant mischief, no protection from other evils.

Another point to bear in mind, especially in treatment, is that—in accordance with the general rule that all abnormal conditions in childhood are less localized than in adults—the intestines are generally affected along with and in the same way as the stomach, so that, though we speak as a rule of chronic gastric catarrh, it would be more correct to term it chronic gastro-enteritis.

Etiology. In considering the causation of dyspepsia we need, of course, to remember that there is usually more than one factor present, but I think that not in childhood only, but also in infancy and adult life, we do not lay sufficient stress upon the influence of heredity as a very frequent predisposing cause. Even some babies will thrive upon what appears an eminently unsuitable diet, whilst others, as well or even more favorably circumstanced in other respects, fail to digest even the most carefully selected and prepared food; the same differences exist in childhood, differences only explicable by hereditary or congenital defects, and hence some children always require infinitely more care than others in regard to their food.

A second great cause of dyspepsia, one which is, if possible, even more potent than in adult life, is town life and indoor life, because children even more readily than their seniors suffer from unhygienic surroundings. In this connection it seems probable that universal compulsory education, by keeping children together indoors from a very early age, during the lightest hours of the day, and often in badly-ventilated buildings, must largely increase the prevalence of digestive disturbance. Much of the dyspepsia arising from these causes is, of course, a part merely of general debility and anæmia, all the organs perform their functions badly, and those of digestion are naturally as much, if not more, affected than others.

The third cause, and certainly the great exciting one, is improper feeding—irregular meals, odd things between meals, tea, sweets, pastry, cakes, etc., and an excess of carbohydrates, particularly of potatoes, all tend to produce and maintain digestive disturbance.

Besides these three great factors there are several other important, though less frequent causes of dyspepsia; it is a common sequel of the acute specifics, especially of measles; that diseases of the respiratory mucous membrane follow measles is well known, but its after-effects on the gastro-intestinal tract, though probably more frequent and hardly less important, are not, I think, sufficiently recognized. Nothing is more common than for the convalescence in this disease to be retarded or incomplete owing to gastro intestinal catarrh, which may be very persistent.

(Throughout childhood, in fact, the respiratory and gastro-intestinal mucous membrane are much more closely connected pathologically than in later life; in the acute bronchitis of adults the tongue is usually furred out of all proportion to the amount of fever, but in children this conjunction is much more marked, and hence in early life diarrhœa is a frequent attendant upon bronchitis and broncho-pneumonia.)

Chills, from the clothing being insufficient, or, as is more frequent, improperly distributed, are an important cause of dyspepsia in childhood, though less so probably than in infancy.

The condition of the teeth as another possible factor is even more often overlooked in children than in adults, but the possibility of painful decayed teeth preventing the proper mastication of the food should not be forgotten; and in this connection may be mentioned also the inveterate habit which some children have of bolting their food.

So frequent is dyspepsia from one or other of these causes that, in the ordinary routine of hospital out-patient work among children of say from two to ten years of age, a very large proportion—if not the majority—of the cases, are brought for digestive disturbances or their consequences.

SYMPTOMS. The symptoms of dyspepsia in childhood are both local or direct and reflex or indirect, and differ widely from those met with in adults. We will take the direct symptoms first: the appetite is capricious and irregular, there being often a craving for unsuitable articles of diet, with distaste for more wholesome but plainer food; hence follows one of the most important symptoms, viz., wasting; simple dyspepsia in adults is rarely associated with much wasting; in children it is necessarily different, for the anorexia at a period of rapid growth must necessarily markedly affect nutrition; at the same time the child is usually pale, irritable, and listless, taking little or no interest either in its play or its work.

The tongue is commonly furred with prominent papillæ, and often presents the curious irregular patchy distribution of furred and overclean areas sometimes termed the mapped or geographical tongue. The bowels are generally costive, but may be irregular, especially in younger children, constipation and diarrhœa tending to alternate. The abdomen is usually distended, and this is the more noticeable owing to the natural prominence of the belly in children from the small pelvic development. Pain, referable either to the stomach or bowels, may be complained of, but is seldom severe in chronic cases.

But besides the direct symptoms, there are others which illustrate very markedly the reflex consequences, which in children so readily result from irritation of any organ and especially of the stomach, and which unless rightly interpreted may be a cause of much trouble in diagnosis and treatment. Headache, particularly in the morning, is a very usual symptom, also grinding of the teeth; night terrors may occur in neurotic excitable children, and may be wrongly and ineffectually treated unless their true cause be understood. Syncopal attacks may undoubtedly be due to dyspeptic conditions, although the possibility of *petit mal* must not be overlooked. A dry hacking cough is by no means rare, and its significance is frequently misinterpreted. Henoch has pointed out that serious asthmatic symptoms—with cyanosis and rapid breathing—may be due entirely to irritation of the nerves of the stomach in gastric catarrh. Of course more acute gastro-intestinal attacks, with severe pain, vomiting, and diarrhœa, and often exaggerated reflex symptoms, are particularly apt to supervene in children who already suffer from chronic gastro-enteritis.

DIAGNOSIS. At times this is clear enough, the local symptoms—loss of appetite, furred tongue, and constipation, with markedly unsuitable diet and defective hygienic surroundings—sufficiently indicate both the disease and its cure, but in many instances there are few conditions which give rise to greater difficulty in diagnosis than that of chronic dyspepsia. The child is brought, perhaps, with a history of wasting and persistent cough; the parents naturally suspect consumption; a physical examination yields somewhat equivocal results, owing to the distinct bronchial breathing heard in a child in the upper interscapular region, over the large bronchi, and especially on the right side. Even if we exclude pulmonary tuberculosis, we naturally think of the possibility of that wellnigh undiagnosable condition, early caseation of the bronchial or the mesenteric glands, and the difficulty is increased by finding, as we often do, that the evening temperature is generally somewhat above normal, whilst the nervous symptoms may excite a suspicion of commencing tubercular meningitis. In many such cases only time and the results of a carefully regulated dietary will clear up the diagnosis, but oft-times, unfortunately, under the mistaken apprehension of incipient tuberculosis, the child is dosed by the parents, and frequently by the medical man, with cod-liver oil, "chemical food," syrups, etc., as well as with a supposed nourishing diet—a line of treatment which only aggravates in the highest degree the real malady.

Next, perhaps, to consumption the most frequent parental diagnosis is that of worms, and, indeed, they are often present, especially thread worms, but to regard them as a cause of the symptoms is a reversal of the true state of affairs; we need more and more to try and impress upon the public mind that intestinal worms (excluding perhaps tapeworms) exist in the alimentary canal because it is in an unhealthy condition—in a state usually of chronic catarrh—and that the symptoms which they are supposed to produce are, as a rule, not due to worms at all, but to the catarrhal state of the bowel which permits their existence. Worms are, in fact, to a large extent a symptom rather than a disease, and we shall best get permanently rid of them by treating the abnormal condition of the intestines.

On the other hand, we have to beware of the danger of mistaking for mere dyspepsia, especially in children who are known to be subject to it, the early stages of tubercular diseases or of typhoid fever, a slight but persistent tonsillitis, of which the child may make no complaint, or a chronic rheumatic condition with very little joint trouble, a by no means rare occurrence in early life.

TREATMENT. The first and most important step is, of course, to recognize the true cause of the varied symptoms for which the child may be brought; it is so easy to get into the habit of treating worms, night-terrors, cough, constipation, etc., purely symptomatically; but the most frequent and serious error is to regard the case as one simply of anæmia and debility, or else of threatened tuberculosis, to be treated by tonics—cod-liver oil, "chemical food," iron, etc.—and by feeding up, both with unsuitable food and at too frequent intervals, with the result of increasing and perpetuating the already existing digestive disturbance. Even in cases in which tonics will eventually be needed, they must not be given until the alimentary canal is in a fairly healthy condition, or they will do more harm than good.

In the great majority of cases the first point to which to attend is careful regulation of the diet; the food should be given at regular intervals and nothing between meals, tea should be forbidden, and all cakes, buns, biscuits, sweets, jams, pastry, etc., these being the more pernicious because often given at odd times to tempt, as is supposed, a poor appetite. Potatoes should be allowed in very small quantity only. On the other hand, we may recommend an ordinary meal of fresh meat once a day, about noon, with green vegetables and a milk-pudding after. For the other meals, fresh fish, porridge, bread and butter, eggs, fruit, and milk in abundance, but as a food, not a beverage. There are, of course, some children, just as there are some adults, who have idiosyncrasies in not being able to digest some special article of diet, but these peculiarities obviously cannot be considered in a general statement—each case must be dealt with on its merits. The parents will often say that children will not take the plain, wholesome diet recommended, and can only be got to eat fancy things, sweets, etc. Owing to long-continued pampering and improper feeding this may be true, but no child will starve itself to death because it cannot get just what it wants, and when it finds its whims ungratified, in default of anything else, it will soon learn to partake of a suitable dietary.

Having regulated the food, the next important matter is to insure a full and regular daily action of the bowels; even though they are said to act every day, a mild aperient is usually desirable, in order to prevent any undue retention whatever of intestinal contents, or any accumulation of mucus, which is often produced abundantly in catarrhal conditions of the bowels in childhood. If there has been constipation and the tongue is much furred, one or two grains of calomel will be useful at first, otherwise rhubarb and soda, or gray powder and soda, should be given every other night. If either round or thread worms be present a few grains of santonin may be added to either of the above powders, and given before breakfast for three or four mornings. When convalescence is wellnigh established half a teaspoonful or so of the compound liquorice powder forms perhaps the most suitable and agreeable habitual laxative.

Thirdly, the child should be out in the open air as much as possible. There is great danger that when, as so often happens, these dyspeptic children suffer from cough they may be kept indoors either altogether, or at least on the slightest approach of cold or damp weather; nothing could be more injurious, and the reason why in large cities the poorest class of children, for whom the street is the habitual playground, are often more healthy than those of a slightly higher social scale, is probably the far greater amount of at least approximately fresh air which the former get. In many cases of town-bred children, in whom the dyspepsia is a part mainly of general debility and anæmia, a change to seaside or country air is the most rapid if not the only cure.

The suitability of the clothing must, of course, be seen to; its quantity is not, as a rule, at fault, but rather its distribution. In this respect old traditions as to hardening the skins of children die slowly, and the chest is not uncommonly enveloped in four or five layers of flannel, whilst the arms, legs, and thighs are left almost entirely bare.

Last, and in many respects least, we come to drugs: A combination of bicarbonate of soda (7 grains), tincture of rhubarb (20 minims), tincture of nux vomica and spirit of chloroform (4 minims of each), may be given to a child of five years three times a day, about half an hour before meals, and if anæmia be very marked 2 grains of citrate of iron and ammonia may be added. After food, if the tongue be not much furred, one or two teaspoonfuls of maltine may be given twice a day. In the later stages, when the dyspeptic symptoms are much improved, a mixture of liquor strychninæ (2 minims) with two or three teaspoonfuls of vinum ferri citratis, is useful. Cod-liver oil is best avoided, except in the winter months and when convalescence is quite established; probably all "chemical foods" and tonic syrups are injurious, owing to the sugar they contain causing fermentation and flatulence. If the nervous symptoms, such as night-terrors, are prominent, some bromide of potassium may be given with the other drugs mentioned; but such symptoms should never be treated by nerve sedatives only.

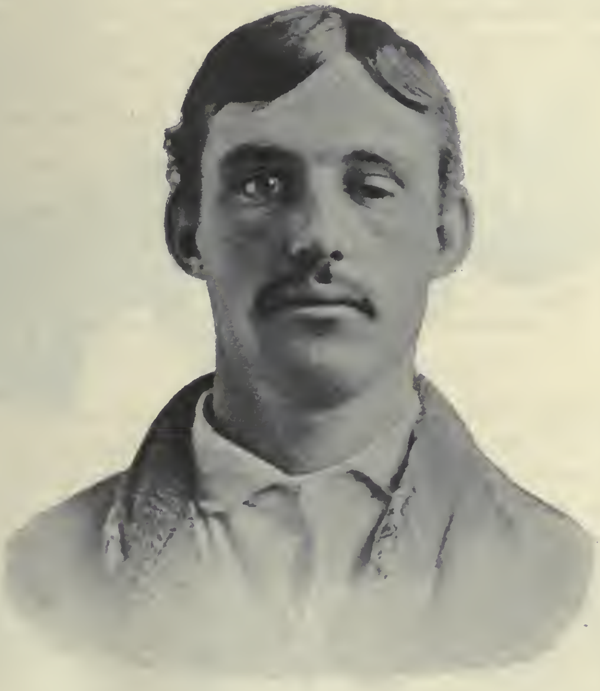
Finally, as an additional incentive to the prompt and active treatment of these cases of chronic dyspepsia, we should remember that if long continued, it must lead to enlargement of the Peyer's patches and mesenteric glands, a condition which facilitates in the highest degree the lodgement of any tubercle bacilli which may be taken in the food, a lodgement which is still further promoted by the lowered general vitality in these cases; thus chronic gastro-enteritis becomes an important predisposing cause—first of abdominal and eventually, perhaps, of general tuberculosis.

TRAUMATIC ENOPHTHALMOS, WITH A CASE.[1]

BY G. E. DE SCHWEINITZ, M.D.,
OF PHILADELPHIA.

CHARLES RODGERS, aged twenty-three years, a laborer, born in Pennsylvania, was admitted to the ophthalmic wards of the Philadelphia Hospital, January 4, 1895, with the following history: On December 21, 1894, while on an extended debauch, he was struck by a trolley car and removed to the Chester Hospital, where he remained in a semi-unconscious condition for four days, both eyelids being swollen shut. When he recovered consciousness and was able to open his eyes, he noticed diplopia, and that the left eyeball was apparently smaller than the right, and had receded into the orbital cavity. The surgeons who first saw him were unable to find evidence of fracture, the only lesions being several lacerated wounds of the left side of the face and scalp, and severe contusion of the left wrist, ankle and left half of the thorax.

FIG. 1.



Traumatic enophthalmos; patient looking straight forward. Sunken appearance, resembling a badly-fitting artificial eye, well shown.

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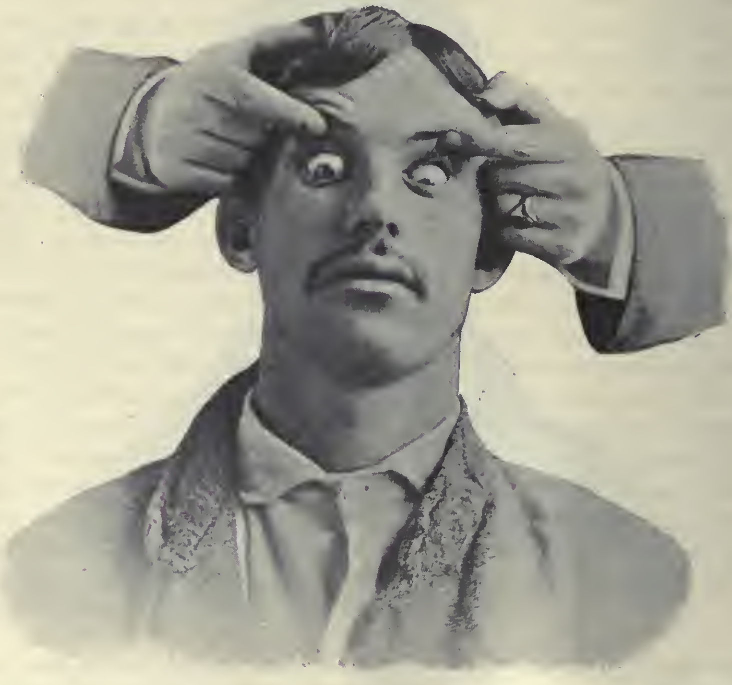
[1] Read before the American Ophthalmological Society, July, 1895.

Recovery from these wounds was uninterrupted. He applied for admission to the Philadelphia Hospital fifteen days after the accident on account of the ocular disturbance.

When I examined him (January 5, 1895), the following conditions were present: Five scars, each about 2.5 cm. long, as follows: one 3 cm. above the left eyebrow, one down and out on the left temple 6 cm. from the external commissure, one at the angle of the lower jaw upon the left side, one at the edge of the scalp on the left side, and one at the vertex. There was a peculiar depression over the right side of the skull posteriorly, at the junction of the parietal with the occipital bone—a depression, however, apparently not connected with his accident.

The left eyeball was sunken 4 mm. deeper into the orbit than the right, and presented the appearances which Nieden so aptly has compared to those produced by an artificial eye. (Fig. 1.) The width of the right palpebral fissure was 13 mm.; of the left palpebral fissure 9 mm. The inter-pupillary distance was 58 mm.

FIG. 2.



Traumatic enophthalmos; patient looking downward. Sinking away of eyeball from the upper lid, and apparent exaggerated downward movement of the globe.

The difference in the level of the corneas measured at their lower borders, when the patient looked directly forward on a horizontal level, was 3.5 mm., the right being higher.

The difference in the level of the upper corneal borders, when the patient looked directly downward, was 5 mm., the left being lower. (Fig. 2.)

The difference in level when the patient looked directly upward was 4 mm., the right being higher.

The difference in level when the patient looked to the left and upward was scant 5 mm., the right being higher.

The difference in level when the patient looked to the right and upward was 4 mm., the right being higher.

Limitation of the movement of the affected eye is indicated by the measurements just recorded, *i. e.*, the left eyeball could not be moved directly upward and to the left or upward and to the right as far as the corresponding globe on the right side, while the downward movement was somewhat exaggerated.[1]

There was crossed diplopia in all portions of the field of fixation, the vertical separation of the images being neutralized by a prism of 4° and the lateral separation by one of 2°, when the patient regarded the test object at five metres, his eyes being in the primary position. It was almost impossible to determine the relation of the double images to each other, owing to the patient's exceedingly contradictory answers, but evidently at the time of the original examination there was paresis of the left superior rectus, associated with insufficiency (perhaps paresis) of the interni. About one month later Dr. Oliver examined the muscle balance, with the following result:

0^2 without correction ⊂ vertical diplopia of ten degrees, shows heteronymous diplopia of two degrees at five metres distance.
0^2 without correction ⊂ horizontal diplopia of ten degrees, shows vertical orthophoria at five metres distance.
0^2 without correction ⊂ vertical diplopia of ten degrees, shows heteronymous diplopia of nineteen degrees at thirty-five centimetres.
0^2 without correction ⊂ horizontal diplopia of ten degrees ⊂ nineteen degrees of corrected heteronymous diplopia, shows orthophoria in vertical meridian at thirty-five centimetres.
(The diplopia producing prisms always placed before O. S.)

Within the last five years the literature of traumatic enophthalmos has been reviewed in some detail by a number of observers. Thus, Hansell[2] observed retraction of the eyeball immediately following injury, and refers to four cases of similar nature. Theodore Beer[3] analyzed thirteen cases and describes two others studied by himself. Schapringer[4] contributes a collection of illustrative cases, together with remarks on the pathology of the affection, and adds two new examples of permanent traumatic enophthalmos which he has observed; and Alex. Ogilvy[5] reports an example of this affection from the clinic of Professor Fuchs, in Vienna, and gives a number of abstracts of previously recorded cases, exactly the same ones which Beer[1] has collected. Not the least interesting feature, from the literary standpoint of this subject, is the earliest account of this ocular anomaly by Henricus Smetius, in 1575.[2]

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[1] W. Lang believes that "the apparent increase in the downward movement of the globe is to be explained by the anatomical arrangement of the inferior rectus, which acts as a depressor of the lower lid. As the two points of insertion of the inferior rectus (the direct into the globe, the indirect into the lower lid) are separated more widely than normal by the sinking of the globe away from the lower lid, the action on the lid is more exaggerated, thus giving rise to the appearance of a greater power of depression than normal."

[2] Transactions of the Philadelphia County Medical Society, February, 1890.

[3] Archives of Ophthalmology, vol. xxii. p. 98.

[4] Klin. Monatsbl. f. Augenheilk., September, 1893.

[5] Ophthalmic Review, May, 1894.

Including the one which I report to-day, about twenty-six cases are upon record, exclusive of non-traumatic examples, of those which are caused by cicatricial bands and adhesive inflammation[3] after operative interference in the orbit, of those which follow extirpation of a tumor involving the cervical sympathetic,[4] and, finally, of those in which there is a monolateral, non-traumatic enophthalmos, changing into exophthalmos when the head is bent forward, such cases, for example, as have been reported by Robert Sattler,[5] Gessner,[6] and others.

The various theories which have been advanced to explain this condition may be summarized as follows:

1. Cicatricial contraction of the retrobulbar connective tissue following periostitis and inflammation (Gessner), or cicatricial adhesions of the eyeball itself (Löw).
2. Atrophy of the orbital cellular tissue on account of a disturbance of nutrition due to a lesion of a nerve centre or tract, and particularly of the sympathetic; or of the trigeminus (Beer's theory).
3. Paralysis of Müller's orbital muscle from lesion of the sympathetic (Schapringer).
4. Fracture of the orbital walls (inner or under), causing enlargement of the orbital space and allowing retraction or sinking of the eyeball (Langenbeck, Tweedy, Von Becker, Lang, etc.).

Schapringer contends, and no doubt with good reason, that the name "enophthalmos" should be retained for those cases in which the retraction of the eyeball occurs indirectly from a nerve lesion; for those which result from a direct mechanical influence, *e. g.*, extensive fracture or perforation of the orbital walls, he prefers the term "Dislocation" or "Luxation."

My own case presented no evidence of fracture (other than the diplopia); certainly there was no infraction of the orbital walls sufficiently great to allow sinking or misplacement of the eye. It is best explained by that hypothesis which assumes that retraction of the eye may be caused by lesion of the sympathetic; indeed, this is not only a hypothesis, but demonstrable by experiments on animals.

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[1] Loc. cit.

[2] See Schapringer, loc. cit., and Centralbl. f. prakt. Augenheilk., vol. xiii. p. 191.

[3] Del Monte: Observazione e note Cliniche, 1871, p. 71, and Litteneuer: Gaz. des Hôpitaux, 1873, i. p. 243.

[4] Matlakowski: Centralbl. f. prakt. Augenheilk., 1881, xv. p. 387.

[5] THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 1885, n. s. 89, p. 486.

[6] Centralbl. f. prakt. Augenheilk, 1889, xiii. p. 161.

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Himly: Krankheiten und Missbildungen des Menschlichen Auges., 1843, Part I. p. 395. One case.

Von Becker (Helsingfors): Archiv f. Ophthalmologie, 1866, vol. xii. Abth. 2, p. 289. One case.

Langenbeck: Archiv f. Ophthalmologie, 1867, vol. xiii. Abth. 2, p. 447. One case.

Harlan: Philadelphia Medical Times, 1871–72, vol. ii. p. 448. One case.

Nagel (quoted by Berlin), Graefe and Saemisch: Handbuch der gesammten Augenheilkunde, 1880, vol. vi. p. 501. One case.

Nieden: Klin. Monatsbl. f. Augenheilk., 1881, vol. xix. p. 72. One case.

Talko: Klin. Monatsbl. f. Augenheilk., 1881, vol. xix. p. 471. One case.

Lang, W.: Trans. of the Ophthalmolog. Soc. U. K., 1889, vol. ix. p. 41. One case.

Gessner: Archives of Ophthalmology, 1889, vol. xviii. p. 269. Three cases.

Tweedy (quoted by Lang): Loc. cit., p. 42. One case.

Hansell: Transactions Philadelphia County Medical Society, 1890. One case.

Löw: Inaug.-Dessert., Berlin, 1890. One case.

Schapringer: New Yorker Medicinische Monatschrift, June, 1890. One case.

Cohn, G.: Klin. Monatsbl. f. Augenheilk., 1892, vol. xxx. p. 337. One case.

Schwarzschild: New York Medical Record, May 14, 1892. One case; also exophthalmos when bending forward.

Beer: Archives of Ophthalmology, 1893, vol. xxii. p. 98. Two cases.

Schapringer: Klin. Monatsbl. f. Augenheilk., 1893, vol. xxxi. p. 309. Two cases.

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Ogilvy, Alex.: Ophthalmic Review, 1894, vol. xiii. p. 145. One case.

Van Duyse and Bribosia: Archives d'Ophthalmologie, 1895 T. xv. No. 3, p. 159. One case; enophthalmos with voluntary intermittent exophthalmos.

De Schweinitz: THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 1895. One case.

A CASE OF DERMOID TUMOR OF BOTH OVARIES COMPLICATED BY A DEPOSIT OF BONE UPON EACH SIDE OF THE TRUE PELVIS, HAVING NO CONNECTION WITH THE TUMORS.[1]

BY CHARLES P. NOBLE, M.D.,

AND

JOSEPH P. TUNIS, M.D.

ALTHOUGH the presence of calcareous matter in and around the ovary has been frequently demonstrated by abdominal surgeons of large experience, a careful examination of the masses removed has almost invariably proved that they were examples of simple calcification, and not of true ossification as had been supposed. Macroscopically, it is impossible to make a positive diagnosis. These calcareous masses resemble very closely irregular lumps of bone. They may be irregularly nodular in outline, of such a firm structure as to require the use of a saw before they can be divided, and yet on cross-section they present no regularity of structure, but are, as a rule, made up of a homogeneous deposit of lime salts, more or less firmly held together by a fibrous stroma. In the great majority of cases when these masses have been examined under the microscope no evidence of true bone has been found. When, therefore, unmistakable evidence of commencing ossification was demonstrated under the microscope in the specimen removed from the patient about to be described, the case was deemed of sufficient interest to report in detail. Some features of this case are unique. The history is as follows:

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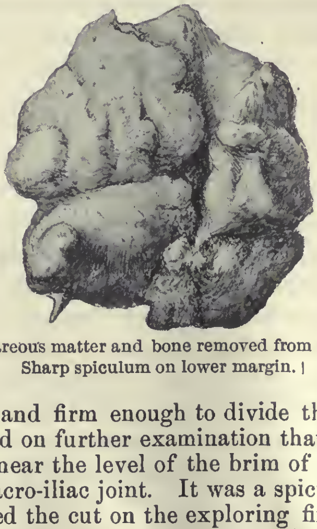
[1] Read before the College of Physicians, Philadelphia, October 2, 1895.

Mrs. T., aged twenty-four years, has always been sterile. Her menstruation began at the age of fourteen. It was never regular, and lasted from one-half to two days. She has always had severe pain before and after the menstrual periods. Her general health has been fairly good, and when she came under observation she was well nourished. She complained especially of abdominal and pelvic pain of very marked character, which was becoming rapidly worse, so as to prevent her from performing her accustomed duties. She complained also of leucorrhœa; and of the presence of a tumor in the abdomen, which she first noticed eighteen months ago. Upon examination, the outlines of a cystic tumor could be readily felt filling the pelvis and extending as high as the umbilicus. From the history and the physical condition present a diagnosis of ovarian tumor was made, the inference being that it was of a dermoid character. An ovariotomy was performed after the usual methods, in the Kensington Hospital for Women, September 8, 1893.

After making the abdominal incision, the left index and middle fingers were introduced to explore the tumor and pelvis. The middle finger of the exploring hand immediately came in contact with something sharp enough and firm enough to divide the skin of that digit. It was then recognized on further examination that a considerable mass of bone was present near the level of the brim of the pelvis and in the region of the right sacro-iliac joint. It was a spicule from this mass of bone that had inflicted the cut on the exploring finger. The mass had no direct connection with the tumor of the right ovary, which was

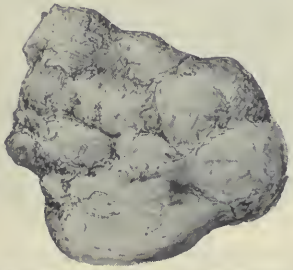
FIG. 1.



Irregular mass of calcareous matter and bone removed from the right psoas muscle. Sharp spiculum on lower margin.

peeled out of its bed of adhesions and removed. A small tumor of the left ovary was then removed. Subsequent examination of these tumor masses showed them to be of a dermoid character. The larger one was about the size of a child's head at term, the smaller about as big as a good-sized walnut. The mass of bone from the right side of the pelvis was then enucleated from its connective-tissue bed, lying for the most part along the psoas muscle. It was irregular, nodular in outline, somewhat quadrilateral in shape, and presented one or two sharp spicula on its surface. (See Fig. 1.) It measured an inch and a half by an inch and three-eighths in its greatest extent, and was three-quarters of an inch thick in its greatest width. A smaller mass was felt in the left side of the pelvis at a somewhat lower plane than that upon the right side and lying between the rectum and the left pelvic wall. This specimen was also removed (see Fig. 2), and presented very much the appearance of the first specimen, although not quite as large.

FIG. 2.



Smaller nodular mass removed from the left side of the pelvis.

The bed from which the specimens were removed presented a number of spicules of bone protruding through the tissues in the neighborhood of the region from which the specimens were enucleated. The mass removed from the right side had been in close relation with the psoas muscle, that on the left side was situated much more deeply and was in relation with the tissues of the great sacro-sciatic notch. It was not deemed advisable to attempt the removal of any additional spicules of bone, as they did not seem likely to inconvenience the patient in any way and were not sufficiently detached to be as readily removed as had the masses represented in the accompanying illustrations. As a subsequent microscopic examination led to the discovery of true bone in the masses removed the case at once becomes one of peculiar interest.

After the pelvic cavity had been thoroughly irrigated and a drainage-tube introduced, the usual antiseptic dressing was applied, and Mrs. T. made an uninterrupted recovery. A short time after the operation she reported herself as feeling very well, and that she had never been better in her life. It is now two years since the operation. She has gained considerably in weight and is free from pelvic pain.

Microscopical examination of the masses removed from the brim of the pelvis. After decalcifying a portion of one of the specimens in a solution of nitric and chromic acids[1] for two weeks, the specimen was

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[1] Decalcifying solution (Rutherford):

Chromic acid	1 grm.
Water	200 c.c.

Then add 2 c.c. nitric acid.

mounted in paraffine after the usual method and sections made with great difficulty. Under the microscope the greater part of the section was seen to consist of a fibrous stroma still containing a few calcareous salts, the greater quantity of which had been removed by prolonged soaking in the acid solution, leaving frequent air-spaces through the section. At a number of points, however, true ossification was demonstrable, as can be seen in the accompanying illustration taken from a low-power (30 diameters) photo-micrograph of the specimens. At these points the irregular fibrous stroma is lost, and there is a firmer, clearer matrix containing numerous lacunæ.

FIG. 3.

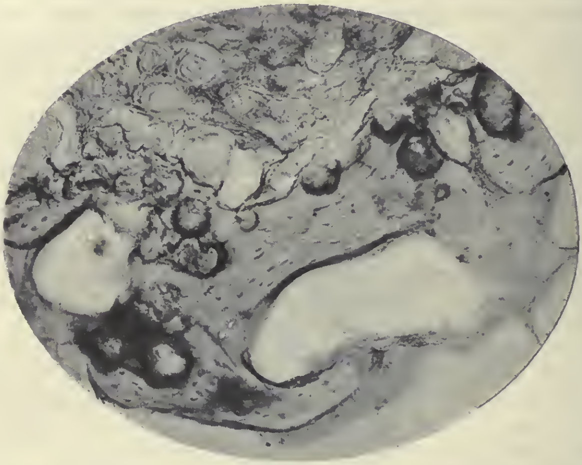

Photo-micrograph of a decalcified section of one of the masses, showing a portion of true bone characterized by numerous lacunæ. Magnified 30 diameters.

Aside from the pathological questions involved in the nature of the specimens removed, the most interesting question in connection with the case is in regard to the origin of these bony formations, as well as the probable increase in size of the spicula of bone which are now present in the pelvic tissues of this patient. It seemed probable at first, when dealing with the right side, that this mass of bone had originally developed in the dermoid tumor, had ulcerated its way through the sac of the tumor, and in that way become independent of and separate from the original growth, but when in examining the left side, the second specimen (Fig. 2) was found so widely removed from the tumor it became a matter of extreme improbability that both of these masses could have ulcerated their way through the dermoid tissues and become attached separately to each side of the pelvis. It would certainly be an unheard-of event for a piece of bone to exist in two dermoid tumors in the same woman, and for each of them to set up an ulcerative process and escape from the tumor; the masses of bone becoming attached in a new position, without the development of general peritonitis or some form of pelvic suppuration. It must, therefore, be concluded that this bone-formation took place independently of the growth of the tumors.

As there are still existing numerous spicules of bone in this woman's pelvis to act as a nidus for further development, the subsequent course of this woman's case will be a matter of interest, especially in regard to her pelvic soft parts. It is not likely that the entire pelvic region will become ossified, although such a condition is possible. If such a condition should result, which seems extremely unlikely, the case would then assume some of the features of progressive muscular ossification. This pathological condition (myositis ossificans multiplex or progressiva) is characterized by a stiffness, commencing in the extremities and becoming progressively worse, so that locomotion soon becomes impossible. It begins in one or more of the *joints* and rapidly extends. Little or no pain is experienced, and the lesions are readily demonstrated on inspection. This condition sometimes follows a slight trauma, but may occur without any such cause. It occurs in the muscles, intermuscular connective tissue, fasciæ, tendons, or periosteum. Eichhorst[1] describes a form of progressive bone-formation which occurs most frequently in males from eight months to fifteen years of age. The first changes occur in the muscles of the neck and back, then in those of the shoulder and arm; subsequently the lower extremities are affected. Sometimes the jaw-muscles and certain muscles of the face are also affected. Such a condition is very readily differentiated from the case in point by the fact that the pathological process attacks the muscles progressively and the lesions are multiple in character.

In an excellent article on "Calcified Tumors of the Ovary," Dr. J. Whitridge Williams,[2] of Baltimore, writes: "Within the past year several gentlemen have sent us solid tumors of the ovaries which they supposed were of osseous nature, but on careful microscopical examination we found that they were not composed of bone, but were due to the calcification of ovarian structure, with which we are all familiar. True, osseous tumors may also occur in the ovary, but they are even more rare than calcified tumors, and it is far more difficult to give a satisfactory explanation for their occurrence than for the calcific changes in fibromata. And it must also be remembered that osseous formations occur but rarely in any portion of the body, while calcification occurs very frequently in many organs. Osseous formations of this character can only be explained by Cohnheim's tumor hypothesis." After a careful search through the literature of this subject, the writer says: "The only cases of osseous formations in the ovary are those mentioned by

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[1] Hermann Eichhorst: Handbuch der speciellen Pathologie und Therapie, Band III, s. 600.

[2] Williams (J. W.): Calcified Tumors of the Ovary. Trans. Amer. Gynecolog. Soc., vol. xviii., 1893, pp. 359-376.

Fürst,[1] Reiss,[2] Waldeyer,[3] and Winckel."[4] And even these cases are open to dispute, as a microscopic examination was not made in every case. Solid tumors of the ovary are rare. Greig Smith says: "Of all tumors of the ovary, probably not more than 3 per cent are solid." (*Abdominal Surg.*, Amer. ed., p. 155.) Of 282 consecutive ovariotomies reported by Homans only three were for solid tumors of the ovary. Of 207 unselected ovariotomies collected from various operators by the *Pittsburg Medical Review* only seven were for growths of this variety. (Pittsburg, 1888.) Of 101 consecutive ovariotomies reported by Tait only two were for solid tumors. (*Diseases of the Ovaries*, American ed., 1853, p. 319.)

A philosophical explanation of the presence of these bony masses in the pelvis of this woman would be to regard them as an incomplete fœtal inclusion and to class the case among the "Endocyma" group of human monstrosities.[5] By this term is meant the more or less complete inclusion of a parasitic fœtus within the body of the autosite. In the large cavities of the body—the abdominal, thoracic, and cranial—the presence of a parasitic embryo is explained by true inclusion, the arching-over process of the walls in the autosite enveloping the parasite within them. In abdominal inclusion (fœtus in fœtu) the parasitic fœtus may be fairly well formed, but never reaches full development. On the other hand, it may be a mass no bigger than one's fist—of lowest development.[6]

In this connection it is interesting to recall the case reported by Dr. J. L. Atlee of congenital ventral gestation in a girl of six years, who lived seventeen years after the discharge of the mass from her abdomen. The full particulars of this case are detailed in the *Transactions of the College of Physicians of Philadelphia*, 1879, 3d ed., iv., 231–248. While the occurrence of these osseous tumors may thus be explained by a process originating in an early part of the embryonal life of the individual, their presence is more readily accounted for as a result of a pathological change in the psoas muscles. While one of the masses removed (as may be seen by reference to Fig. 1) resembled in outline an imperfect vertebra, it is difficult to imagine that another vertebral column included within the abdominal cavity of the patient should have undergone complete division and passed down into the pelvis in the substance of either psoas muscle. The spicules of bone presented equally on both sides of the pelvis.

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[1] Fürst: Knochenneubildung in der Wand einer Ovariencyste. Virchow's Arch., 1884, xcvii. 131.

[2] Reiss: Ueber Enchondroma Ovarii. Diss. Ing. Berlin, 1882.

[3] Waldeyer: Diffuses Eierstocksfibrom von eigenthümlichen Baue. Archiv f. Gyn., 1871, ii. 440.

[4] Winckel: Frauenkrankheiten, 2. Auf. 1890, 640.

[5] Hirst and Piersol: Human Monstrosities, part iv. p. 199. Lea Bros. & Co., Phila., 1893.

[6] Ahlfeld (F.): Die Missbildungen des Menschen. Leipsig, 1880. Text-book and atlas.

REVIEWS.

CYSTITE ET INFECTION URINAIRE. Par le DR. MAX MELCHIOR. Edition Francaise. Revue Annotee par le Dr. Noel Halle. Preface du Professor F. Guyon. Paris, France: G. Steinheil, 1895.

CYSTITIS AND INFECTION OF THE URINARY TRACT. By DR. MAX MELCHIOR.

THIS remarkable work receives an eulogistic preface from Guyon, who is evidently much pleased that a translation has made it accessible to French students. Indeed, it would be difficult to praise it too highly since it is undoubtedly the most accurate and important contribution to the subject of urinary affection which has appeared since this general question was first considered and discussed. It represents an experimental and critical review of the entire subject, and is, in the main, completely in accord with the findings of Guyon and his distinguished pupils. Thirty-six cases of cystitis are carefully studied. In twenty-five of these the colon bacillus was found, often as pure culture in the acid and purulent urine. Some of his observations are of peculiar interest; thus in one instance a patient, whose urine showed streptococcus, was attacked by facial erysipelas; in another instance, the cystitis developing in the course of a convalescence from typhoid fever, was proved to be due to the typhoid bacillus.

The first chapter is devoted to a historical *résumé* of the subject. This is extremely thorough. The next chapter to what is termed Technique, including the method of collecting the urine without contaminating it, control observations upon healthy patients, chemical, microscopical, and bacteriological examination of the urine, examination of the microbes and inoculation experiments on animals.

The third chapter is devoted to clinical investigation. In all thirty-five cases are reported; these should serve as models of what scientific reports should be. There follows a detailed description of the various micro-organisms found with experiments on animals, and the proof that the so-called urinary bacillus is identical with the bacterium coli commune. It is interesting to note that out of his thirty-five cases the tubercle bacillus was found in three and twice as a pure culture. There follows this subject-matter a discussion of the routes by which the bladder is infected. This necessarily implies an exposition of the bacterial flora of the urethra, the vagina, and the preputial smegma. In these regions the colon bacillus was frequently found even after disinfection, according to modern methods. The whole question of cystitis as dependent upon the passage of germs from the kidneys is also carefully considered. The author is, however, strongly opposed to classification of the disease, holding that the various symptoms and lesions depend not so much upon the different forms of infection as upon the tissue resistance.

There is a fine chapter upon prophylactic and therapeutics. As to treatment, nitrate of silver takes first place, the bladder being filled with the solution of this agent 1 to 500 or even 1 to 200. This is allowed to remain for five minutes, after which the viscus is washed out with boric acid. The treatment is repeated once or twice a day. Even stronger solution is sometimes required. The silver salt is stated to be toxic to all forms of bladder microbes. The author closes with the following *résumé* and conclusions, which are quoted because they represent the latest and most advanced views upon the important subject of cystitis.

1. Cystitis is due to microbes, excepting the few cases of chemical irritation. Usually there is found in the urine a pure culture very abundant. The colon bacillus is the one commonly encountered. It is pyogenic, but its virulence varies greatly. In the urethra and the vagina pathogenic microbes are frequently found. If introduced into the bladder they may cause cystitis. Microbes alone are not able to cause cystitis. The proteus of Hauser, if introduced into the bladder in virtue of its strong decomposing action on the urea, sets up inflammation. There is usually required, however, bladder congestion, the most frequent causes of which are retention or traumatism. These factors, however, are merely predisposing, the microbe being the exciting cause.

2. The different degrees of cystitis depend upon pre-existing lesions, the quantity of the nutritive material, and the special characteristics of bacteria, especially their virulence. The existence of catarrhal cystitis is doubtful, though, possibly, non-pyogenic microbes in the cellular tissue may provoke suppuration.

3. Ammonuria is often an insignificant phenomenon occurring in the course of cystitis, often is entirely absent. Aside from the tubercle bacillus there is an acid cystitis caused by the colon bacillus, the pyogenes streptococcus and the more rare micro-organisms, the gonococcus and the typhoid bacillus. If urine, taken with antiseptic precautions, does not yield cultures upon appropriate media there is a probability of tuberculous infection. There is a true gonorrhœal cystitis due to the gonococcus of Neisser. Urinary fever is due in part to the absorption of the urinary microbes into the blood, particularly, and certainly most frequently to the absorption of bacterial toxines. To avoid producing cystitis it is not sufficient to sterilize the urethral orifice. The whole urethra must be irrigated with boric acid, otherwise a sterile instrument is at once infected.

In the treatment of cystitis nitrate of silver is the sovereign remedy.

The book ends with a most exhaustive bibliography. Guyon's almost extravagant praise is a proper index as to the great value of this work. It is to be hoped that it may be made more accessible to English readers by further translation into the English language. E. M.

A Text-book on Nervous Diseases, by American Authors. Edited by Francis X. Dercum, A.M., M.D., Ph.D. Pp. 1056, with 341 engravings and 7 colored plates. Philadelphia: Lea Bros. & Co., 1895.

It is a compliment to Dr. Dercum's professional standing and due to his popularity among his fellow neurologists, that so many of them have been willing to assist in the preparation of this book. The editor has shown his appreciation of their labors by printing the names of the contributors opposite to the title page, a plan which is preferable to the usual one of stating that the book is by Dr. X., the editor, "and others."

The duties of an editor are not unlike those of the leader of an orchestra. He must have an intimate acquaintance with the work to be done and the effect to be produced. He must know the accomplishments of those who are to assist in the rendering of the work, and must have such knowledge of the entire subject as to be able to preserve the proper relation of themes to each other. For the most part Dr. Dercum has done his work in an able manner. He has assigned parts to the proper men. It is not surprising to find that Weir Mitchell and the editor have written the Introduction; Lloyd, the chapter on Hysteria; Osler, the one on Infective Diseases; that Sinkler has written on Choreiform Affections; Mills, on Cortical Diseases; Dana, on Apoplexy; Starr, on Tumors of the Brain; Collins, on Tropho-Neuroses; Jacoby, on Diseases of the Muscles; and Keen, on the Surgery of the Brain, Spinal Cord, and Nerves. The choice of an Ophthalmologist to detail the examination of the eyes from the standpoint of the Neurologist was unnecessary, if not unfortunate. The editor himself might have written this part of the Introduction, or the subject might have been treated exclusively by Dr. De Schweinitz, who in the latter part of the book discusses very ably most of the ocular symptoms in connection with affections of the cranial nerves. If the reviewer were to give his impressions in full of Dr. Oliver's contribution he might do an injustice toward an author whose previous record has been good, but it must be stated that his article appears to have been written in great haste; that it was not properly corrected in proof; that the facts are even misstated and at times absurdly worded, as when he says of ptosis "that it is both congenital and acquired." On page 40 we find the following curious blunder, "for instance, if the external rectus muscle be paralyzed the eye will be turned *outward* by the unapposed action of the healthy internal rectus muscle, thus producing the condition known as paralytic convergent squint or abducens paralysis." It would be difficult to find a more awkward definition of the Argyll-Robertson pupil than the following: "Where, although there is free movement of the iris to the so-called accommodation reflex (see below) the pupil becomes fixed at some definite area whilst light is thrown upon the retina, the condition is known as the Argyll-Robertson pupil." Dr. Dercum should have subjected this part of the book to a much more careful scrutiny.

The editor has written several excellent chapters, notably the ones on Neurasthenia and Paralytic Dementia. In fact, all of his work is characterized by a conscientious thoroughness. His example might well have been followed by others, and thus each subject would have been assured a discussion that would have been entirely proportionate to its importance; but this lack of proportion is the crowning fault of co-operative text-books. Thirty-two pages are devoted to Paralytic Dementia and only twelve to Locomotor Ataxia; six to Multiple Cerebro-Spinal Sclerosis, and only a little more than four pages to Anterior Poliomyelitis. For these discrepancies the minute subdivision of subjects is largely responsible. It would be better unquestionably to entrust the discussion of all the diseases of the brain to one author; of insanity, to another; and of diseases of the spinal cord to a third, and so on: but when, as in this book, brain diseases are discussed by six different writers, spinal cord diseases by five, and even the peripheral nerves by three different authors, lack of proportion is unavoidable and repetition frequent.

But there are still other evils inherent in this class of books. Several contributors, notably Osler and Gray, have adhered too closely to chapters in their own text-books. In cyclopædic works undue importance is given to some subjects; thus rheumatism, which is an occasional etiological factor in some functional and cerebral disorders, is discussed by Dr. Fisher, in the chapter on Diathetic and Toxic Affections, as though it were possible to make a special classification of rheumatic affections of the nervous system; and this writer gives us, in a few lines, the pathology, diagnosis, and treatment of these affections. But the success of this venture may be gauged by the remarks on diagnosis. "Diagnosis is not difficult where a previous history of rheumatism is present, otherwise the symptoms are not diagnostic."

The arrangement of the book before us is well considered. Dr. Dercum has followed the plan adopted by several recent writers, and has placed the functional disorders first; these are followed by Diseases of the Brain, Diseases of the Spinal Cord, Cerebro-spinal Diseases (multiple cerebro-spinal sclerosis, paralytic dementia, syphilis of the nervous system), Diseases of the Cranial and Peripheral Nerves, Diseases of the Muscles, Tropho-neuroses, all of them in the order here mentioned. The book ends with the chapter on Surgery of the Nervous System and one on Neuro-electro-therapeutics. In future editions it might be well to place chapter XXXII on Symptomatic Disorders after chapter IV. Dr. Peterson's contribution (incorrectly described in the table of contents as Systemic Affections) should have preceded the other chapters treating of Spinal Cord Diseases, as the former contains important and fundamental facts regarding the anatomy and physiology of the spinal cord. Diseases of the Cranial Nerves should be discussed, it seems to us, in conjunction with Brain Diseases rather than with Diseases of the Peripheral Nerves. Bulbar Palsy would fit in a little better with Disease of the Brain than in its present position between Lesions of the Cauda Equina and Multiple Cerebro-spinal Sclerosis; but we grant that there is room for a difference of opinion on some of these points.

The book is tolerably complete, yet, considering its size, special chapters might have been devoted to the anatomy of the various parts of the central nervous system, and the student would no doubt be benefited by some account of the action of the muscles and by a more detailed statement of hereditary spinal affections. To finish with the general makeup of the book we must confess that typographical errors are too frequent; proper names seem to have suffered most; we read Eulenberg for Eulenburg, Kuhler for Kahler, and Tammany has invaded the holy precincts, for we read Croker instead of Crocker, also Lissaur instead of Lissauer, Struempel instead of Struempell, and there is nothing quite as bad in a typographical sense as the reference at the bottom of page 507. The editor must have been quite exhausted from his arduous duties at the time of reading proof of this page. But these are minor defects. The illustrations are good and have been supplied by the editor, not only for his own, but for many articles written by others. He seems particularly fond of serial photographs; some of these are very effective, but others are confusing. Cross-legged progression is illustrated far better by the single Fig. 149 than by the series of Fig. 144. The series in Figs. 205 and 206, illustrating the gait in locomotor ataxia, show very little more than one or two well selected pictures would. The editor has given evidence throughout the book of his interest in almost every subject, and without wishing to speak disparagingly of the many able writers associated with him, we think the book would have been more satisfactory if he had written the whole of it.

Passing to a review of the individual articles (we can single out a few only) we shall find that a great deal of good work has been embodied, we hope, not buried, in this American Text-book. The Introduction by Dr. Weir Mitchell and Dr. Dercum is written in a happy vein, and gives most of the facts for which the student would look in a chapter of this character. The study of gait is more thorough than we had a right to expect, and is based largely upon original studies. The electrical reactions are not described very completely, and we do not find any reference to Goldscheider's sensory areas in the pages on the study of sensation. Dr. Dercum's chapter on Neurasthenia is a model of its kind. Every part of the subject is discussed fully and clearly. It is particularly gratifying to find that the points of differential diagnosis between neurasthenia and hypochondriasis are clearly stated and that the digestive disorders of neurasthenia have received the discussion that they deserve. It is a very happy idea of the author to introduce an account of the researches of Hodge on the changes due to functional activity in the nerve cells and to argue from this the changes that would be likely to occur in conditions of exhaustion. Dercum also utilizes Mosso's observation of the changes in the blood due to fatigue, in order to account for some of the neurasthenic symptoms present in anæmic individuals. While it may be a little premature to claim that we know the pathology of neurasthenia, such considerations as the above will eventually lead to a proper understanding of the changes that occur in this and other functional disorders. In the treatment of neurasthenia, Dercum, naturally enough, attaches the greatest importance to the Rest-Cure, and in this we are disposed to agree with him; but we submit that hydro-therapeutic procedures seem to be much more efficient than electricity; we regard the latter as a somewhat antiquated feature of the Rest-Cure plan as originally proposed by Weir Mitchell. Our own experience is also entirely at variance with that of Dr. Dercum, who recommends, and we think rather unfortunately, a liberal use of the bromides in the treatment of neurasthenia, and is opposed to the use of strychnine. The bromides have done so much harm in innumerable cases that Seguin might well repeat his paper on the use and abuse of those drugs. The final paragraph of Dr. Dercum's article contains what some readers might consider a species of medical heresy. The reviewer does not think that the facts as yet warrant the statement of the author, after speaking disparagingly of animal extracts, that distinct exception must be made as regards the extract of the testicle. "There can be no doubt that even when the possibility of suggestion is excluded the use of this remedy is of benefit."

Of Dr. Lloyd's article on Hysteria we need merely say that it is fully what we would expect from the author's previous writings on this subject. He is in thorough accord with the modern theories of Hysteria, and we are glad to see that he combats Löwenfeld's views that hysteria and neurasthenia resemble each other in essential points. Of astasiaabasia he has made, and with good reasons, a purely hysterical condition. The treatment of hysterical affections is carefully described. "The whole list of bromides, chloral, opiates and antipyrine is to be condemned." This has our approval, and so has the following: "The excision of the ovaries for pure hysteria is a barbarism founded upon the false pathology of the disease that was taught by the ancients and in the middle ages. It is a crime both against Nature and against science." Lloyd also seems to attach proper importance to hydrotherapy.

These chapters are followed by a very careful consideration at the hands of Knapp of the nervous affections following railway and allied injuries. In attempting to explain this condition Dr. Knapp has gone over much of the ground that is covered in the previous chapters on neurasthenia and hysteria, but this is an instance of repetition which is unavoidable in a book of this description. The writer recognizes the fact that various functional disorders may be caused by traumatic injuries, but does not accept the "traumatic neurosis" of Oppenheim as a clinical entity. Knapp says very correctly "That the introduction of this term has tended to check the differentiation of the various obscure traumatic affections, and it has substituted a general term for particular terms, which always leads to confusion."

Osler's discussion of Cerebro-Spinal Meningitis seems very familiar from the account he gives of it in his text-book. On page 207 we find the statement that endocarditis and pericarditis are rare complications of cerebro-spinal meningitis; in his text-book he states that "they are not uncommon." Which statement is correct, or may the reader take his choice?

In the discussion of tetanus, hydrophobia, and tetany, all the facts are stated in succinct fashion. There is a remarkable terseness about all of Osler's writings, and yet, when one looks for omissions one finds that he has managed to say everything that was necessary to say on a given subject. As opposed to the excessive verbiage of some authors such terseness constitutes an eminent virtue.

Sinkler has written so frequently on Chorea that we must commend him especially for having written a new article. All the facts are well stated, the symptomatology is well described, and ample statistics are given to prove any and every point, but we are glad to see that the storm centres of Philadelphia do not play quite as important a rôle as in former writings on this disease. The statement which the author quotes from Oliver that "in almost all cases of chorea there exists a low form of optic neuritis" is a trifle hazardous. In discussing the anatomy and pathology of chorea, Sinkler gives a fair summary of the more important autopsies that have been described. He is inclined to adopt the infectious theory of chorea, but adds that "in the present state of our knowledge we are without facts sufficient to prove that transient nervous diseases are caused by microbic infection." In the treatment of chorea he advocates providing rest, quiet, and seclusion for the patient. He also favors the administration of arsenic in ascending doses. That multiple neuritis occasionally follows the administration of arsenic in large doses is conceded by Sinkler and is a fact that should be brought home to the attention of physicians who are fond of pushing such drugs to an extreme. Athetosis, Myoclonus, Electrical Chorea, and Huntington's Chorea are discussed at the end of the chapter.

Of Gray's chapter on Epilepsy we have stated that it bears a remarkable resemblance to the one in his book. A little more might have been said on the differential diagnosis between focal and general epilepsy. From the collection of forty-four cases operated on by various surgeons he infers that only two were cured, but many more were temporarily relieved. In making up tables of this description the cases of non-traumatic epilepsy that come on in early life should be included, and differentiated from those due to injury. Exception must be taken to the statement that "it would be folly to operate in cases of single or double hemiplegia and in the paraplegias of the so-called palsies of childhood." Recent authors have shown that cysts and old scars are often responsible for the epilepsies associated with infantile hemiplegia, and the attempt to evacuate the cysts or to remove the scar has been beneficial in a number of instances.

Diseases of the Brain are introduced by an exhaustive and scholarly chapter on Arrested Development, Malformations, and Hydrocephalus, written by N. E. Brill. The author has built up his article on strictly anatomical lines, and gives just such information as the student or specialist would look for in a large standard work. Brill wishes the term porencephalia restricted to congenital pathological defects only; but the trouble is that it is often impossible to distinguish between truly congenital defects and those that are acquired at or immediately after birth. Dr. Mills's chapter on the Anatomy of the Cerebral Cortex and the Localization of its Functions has been written with unusual care. Knowing his theories regarding the motor and the sensory areas, we feel indebted to him for the impartial way in which he has presented the views of his adversaries. The discussion of aphasia at the end of this chapter is thoroughly satisfactory. Wyllie's utterances have been fully utilized, but we regret that the author did not refer to Freud's views, which tend to counteract any purely mechanical theories of speech. Dr. Dana's article on Apoplexy presents the subject fully from an anatomical, clinical, and pathological point of view. Incidentally he gives a very good account of the various causes leading to vascular disturbances. We are glad to note that he concedes syphilis to be a potent factor in the predisposition to cerebral hemorrhage, for the majority of authors claim that specific endarteritis leads to thromboses much more frequently than to hemorrhage. An unfortunate typographical blunder mars the last pages of this chapter; pages 468 and 469 have evidently been interchanged.

Starr's discussion of Tumors of the Brain gives evidence of an intimate acquaintance with the literature on the subject and of a large personal experience. It is not the fault of Starr, but of the character of the book, that his remarks on visual localization and on aphasia are to a great extent a repetition of what was said in the chapter by Mills. Dr. Starr is more hopeful than most of us regarding future success in operations for the removal of brain-tumors. He thinks, and justly enough, that in cases of brain tubercles an operation is capable of prolonging life, and hence should not be wholly condemned. He is also of the opinion, although statistics indicate that but 3 per cent. of brain-tumors can be successfully removed, that this percentage will be materially changed within the next ten years. Let us hope that this will be so. But the reviewer feels inclined to doubt this, for the percentage of cures has shown very little increase within the last five years, although the ablest surgeons have done these operations, and the early diagnosis of tumors has, perhaps, reached as a great a refinement as will be possible within the coming ten. This able chapter of Starr's is followed by a condensed yet satisfactory discussion by the editor of the cerebral palsies of childhood. In this chapter the illustrations are particularly well selected and are a material aid to the understanding of the subject. In discussing the treatment of the diseases the author favors surgical interference whenever warranted.

The chapters on Spinal Cord Diseases are on the whole not as satisfactory as those in the other sections of this book. Peterson, in particular, must have considered himself limited in space, for it is difficult to understand why he should have given such scant account of so important a disease as amyotrophic lateral sclerosis or why poliomyelitis anterior should receive only a little more than four pages. In discussing the pathology of this disease the author has not given as full an account as the many excellent and recent autopsies would have warranted. His statement that there are no recorded autopsies in cases of pure primary lateral sclerosis will have to be modified in view of Struempell's publications. Possibly this chapter was written before Struempell's articles appeared.

Great praise is due to De Schweinitz for the discussion of diseases of the optic, oculo-motor, pathetic and abducens nerves, and to Collins for his exhaustive treatment of the tropho-neuroses. We know of no more satisfactory account of such rare disorders as Raynaud's disease, angioneurotic œdema and of acromegaly than is to be found in these pages of Collins's. The tables on page 897 give the differential diagnosis between acromegaly, myxœdema, and hypertrophic osteo-arthropathy. The author has also given an account of adiposis dolorosa, as described originally by Dercum, and of scleroderma and morphœa. It is well in this connection to call attention to the successful treatment of some forms of trophic disease by the use of the thyroid extracts. Dr. Burr has written a separate chapter on the diseases associated with pathological changes in the thyroid gland. The symptoms of the various diseases could thus be brought out more easily by contrast with one another if not by points of resemblance. Jacoby has written a terse account of Subacute Myositis and of the Progressive Muscular Dystrophies. Keen's article on Surgery of the Brain, Spinal Cord and Nerves is very complete from a surgical point of view. It will be a great aid to those who are contemplating operations upon the central or peripheral nervous system, operations that are, after all, still rare. The chapter on Neuro-Electro-Therapeutics, with which the book ends, is altogether too good to appear in the unfortunate position which it holds; it might to much greater advantage have been added to the introductory chapter, or might have preceded the discussion of the organic diseases of the nervous system.

After a careful consideration of this voluminous text-book we are convinced that the majority of the articles will be found helpful, that the book is a credit to the industry of American Neurologists, and that such faults as it possesses are due chiefly to its "coöperative" character.

B. S.

PHYSICAL AND NATURAL THERAPEUTICS; THE REMEDIAL USES OF ATMOSPHERIC PRESSURE, CLIMATE, HEAT, AND COLD, HYDROTHERAPEUTIC MEASURES, MINERAL WATERS, AND ELECTRICITY. By GEORGES HAYEM, M.D., Professor of Clinical Medicine in the Faculty of Medicine of Paris. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Pp. 426, with 113 illustrations. Philadelphia: Lea Bros. & Co., 1895.

IN the October, 1894, number of this JOURNAL we expressed a wish that this work were accessible to English readers. We find this wish more than realized in the substantial volume which lies before us. We say more than realized, because the omissions which we pointed out in our earlier review have been, to a considerable extent, filled by the conscientious work of the editor. The translation differs from the original French work chiefly in the arrangement and transposition of matter, the separation of hydrotherapeutic measures from thermic agents, the addition of a therapeutic index, the omission of certain illustrations and the insertion of others. We miss also the colored map giving the mineral springs, climateric stations, and sea-baths, which was found in the original. Certain other changes will be mentioned in detail. Of the criticisms which we made most have received attention. We could wish that static electricity, for instance, had been discussed at greater length, and that metallic electrolysis had been fully presented. The analyses of Rubinal-Condal (p. 184) and La Puda (p. 198) are still wanting. In the latter quotation by error "froide" was left untranslated; as it now stands the word might be assumed to be a part of the name. On the other hand, we recognize many and valuable additions, the Solis-Cohen compressed-air apparatus, various electrical devices which are well illustrated, and in a very large number of instances comments of great practical importance. In the three matters in which the original work was so markedly deficient the additions of the editor are of especial value. These are the climate, health-resorts, and mineral springs of America. Although no one of these sections is extensive, we venture to say that when we consider the practical value, the fair statements, the conciseness of diction which are seen here, the information which the editor has compressed into these pages will be found more satisfactory than most more pretentious efforts in the same direction. In electricity, throughout the whole section, the hand of the editor appears, and always to the advantage of the reader. We welcome the book to our library, where it occupies a place beside the original, and that it will be more frequently consulted than the latter is not alone due to the fact that it contains information not to be found in the French edition, but also that it has been adapted to the needs of the American physician by the painstaking skill, good literary judgment, and broad, practical experience of the editor. R. W. W.

A Treatise on the Nervous Diseases of Children, for Physicians and Students. By B. Sachs, M.D., Professor of Mental and Nervous Diseases in the New York Polyclinic; Consulting Neurologist to the Mt. Sinai Hospital; Neurologist to the Montefiore Home for Chronic Invalids; Ex-President of the American Neurological Association. 8vo. Pp. 666. New York: William Wood & Co., 1895.

The author of this volume has made a valuable and original contribution to medical literature in a field not previously thoroughly explored. He concisely summarizes recent literature upon the subject, and has added much that is of decided interest.

The book opens with a chapter upon Methods of Examination, which is appropriate, exceedingly clear, and well illustrated. General Nervous Diseases are next treated of, beginning Part I. of the volume. The convulsions of children are so frequent and come so often to the attention of the general practitioner of medicine that this chapter is most valuable and welcome. Following the author's custom, only those methods of treatment are described which he has found personally to be efficient. He ascribes little, if any, value to the use of the hot bath, the procedure most commonly employed. He prefers the inhalation of chloroform, of nitrate of amyl, followed, if necessary, by the use of opium. Having controlled the convulsions, their cause is to be sought and removed. Croup is to be treated upon much the same principle, and regular breathing is to be procured by traction upon the tongue and the application of cold and wet towels to the chest. Attention is called to the importance of remedying essential malnutrition as illustrated in cases of rhachitis.

In treating of Epilepsy the characteristic features of epileptic attacks and those of Hysteria and Syncope are placed in contrast for purposes of diagnosis. The medical treatment of Epilepsy is concisely given, while in discussing the surgical treatment the researches of the author, with operations by Gerster, have done much to determine the value of surgical interference in these cases.

Hysteria forms the subject of an interesting chapter in which the reader is not wearied by theory, but is given a concise statement of what is actually known regarding this obscure condition. Due attention is called to the benefits of rest and isolation in treatment.

The author's chapter upon Chorea embraces the gist of the voluminous literature upon the subject. In the treatment of this condition rest and food are considered of first importance, the author stating that "Milk and rest will do more for most cases of chorea than any other two measures." Lukewarm baths are a valuable adjunct, while time-honored arsenic receives due mention and is the best of drugs for this disorder. A full and interesting chapter upon Choreiform Diseases appropriately follows, with a full bibliography of recent literature.

Tetanus is to be treated by antitoxin, and the belief is expressed that future researches in this direction may ultimately prove satisfactory. Tetany is next discussed, and attention called to the rarity of the affection in America.

A valuable and interesting chapter is devoted to Headaches and the treatment of the various varieties. Food, hydrotherapy, and caffeine are most useful in the headaches of anæmia. In treating Migraine, rest in bed is considered most important. Regulation of digestion, and caffeine with iron, quinine, or arsenic, or with cannabis indica, are also recommended. The author has not been deceived by the exaggerated importance ascribed to ocular defects in these cases. While he does not oppose sensible treatment by competent oculists, he is naturally averse to treatment based upon extreme theories. He would have the eye-condition corrected as a physical defect, but he rightly protests against the assumption that slight errors in refraction and accommodation may be the cause of this neurosis.

The Disorders of Sleep include Night Terrors and Enuresis.

Under the head of Vaso-Motor and Tropho-Neuroses the author gives a brief description of Exophthalmic Goitre, Thyroid Enlargements, Tachycardia, Myxœdema, Angio-Neurotic Œdema, Raynaud's Disease, and Facial Hemiatrophy.

Part II. treats of Organic Diseases of the Nervous System, and begins with Diseases of the Peripheral Nerves. A most valuable section is that upon Obstetrical Palsies, and a useful Table of contrasted symptoms with those of Cerebral Birth-Palsies is given. The attention of obstetricians should be given to this subject, upon which the writer's observations have been of special value. Facial Palsies conclude this chapter. Multiple Neuritis is described at length.

The author devotes a chapter to the Anatomy, Physiology and Pathology of the Spinal Cord in Children, with appropriate illustrations. Anæmia and Hyperæmia of the Cord form the subject of a brief chapter. Infantile Spinal Paralysis is fully described and attention called to the diagnosis between Acute Spinal and Acute Cerebral Palsy. The author does not share in the gloomy prognosis often given in cases of poliomyelitis; during the acute stage he addresses his treatment to the general condition only, and calls attention to the uselessness of treatment addressed to the muscles during this stage of the disorder; when, however, this is past, orthopedic measures should be employed without reserve, with massage and electrical treatment. Acute Myelitis and Traumatic Injury of the Cord form the subject of the following chapter. The author calls attention to the danger which may arise in the use of strychnine in these cases. Syphilis of the Cord and Disseminated Sclerosis receive appropriate treatment at his hands. Pott's Disease is given as the principal cause of Compression Paralysis; in the treatment of these cases the tubercular process in the spinal column must first be checked. Counter-irritants are useless, while surgical interference is not borne so well by children as by adults. The value of plaster-of-Paris and appropriate apparatus is fully appreciated. In an interesting chapter upon Tumors of the Cord the author states that extra-medullary growths are the only ones that we can expect the surgeon to remove. In cases of tubercle and gumma, surgical interference is advised if no result has followed thorough treatment for a period of from three to four weeks. Hereditary Diseases of the Cord receive full and comprehensive treatment. The Progressive Muscular Atrophies are well illustrated, while the section upon Diseases of the Cord is closed with a chapter upon Malformations and Conditions Due to Defective Development.

Diseases of the Brain are described in the concluding section of the volume, and the Anatomy and Physiology of the Brain are first considered. Meningitis and Encephalitis are next in order, and attention is called to the difficulty in diagnosticating tubercular disease during the early period of meningitis. Other forms of Meningitis and also Inflammation of the Brain Substance conclude the chapter. In an interesting chapter upon Hydrocephalus the writer questions the success of drainage, because the fluid is replenished so rapidly that but little can be accomplished.

Infantile Cerebral Palsies receive a most interesting and valuable exposition. The author has previously made valuable contributions to the literature of the subject, and especially in drawing attention to the influence which prolonged labor exerts in the production of these disorders. The general practitioner, and especially the obstetrician, will find this chapter of the greatest importance. Tumors of the Brain and Brain Abscesses are considered fully but concisely. The author has found in his experience that children tolerate operations upon the brain very poorly indeed: this fact and the prevalence of tubercular tumors in the brains of children render surgical interference less successful than in the adult. For brain-abscesses the surgeon should be summoned early, and operation be performed as promptly and rapidly as possible.

The author has collected the various types of Diseases Due to Defective Development of the Brain in the following chapter. His experience does not permit him to conclude that craniectomy in these cases is likely to permanently increase the intra-cranial capacity, nor has he seen improvement follow this operation. Diseases of the Mind form the subject of the concluding section of this volume, and here again the importance of prenatal conditions and also of convulsions is fully set forth. An Appendix to the volume contains therapeutic suggestions.

The author has contributed a most interesting and valuable book to the literature of pediatrics. While a portion of the subject-matter receives treatment in works upon General Medicine, his extensive experience and original observation in the disorders of early infancy render this volume unique and especially valuable. His extensive acquaintance with the literature of the subject is shown in the bibliographies appended to each chapter. This book should be especially valuable to the general practitioner and to the obstetrician, who will find in its clear and interesting matter an explanation of many phenomena which occasion difficulty in diagnosis. The writer's directions regarding treatment are rational and explicit, and should be highly appreciated by the reader. The book is clearly printed and abundantly illustrated, most of the illustrations being clearly produced. E. P. D.

A Handbook of Medical Diagnosis for Students. By James B. Herrick, A.B., M.D.; Adjunct Professor of Medicine, Rush Medical College; Professor of Medicine, Northwestern University Woman's Medical School; Attending Physician to Cook County Hospital; Assistant Attending Physician to Presbyterian Hospital, Chicago. With 80 illustrations and 2 colored plates. Pp. x., 432. Philadelphia: Lea Brothers & Co., 1895.

Designed, as this book is, for the use of students, it will be found that the author has admirably accomplished his purpose as expressed in the preface in the hope "that the volume will be more than a quiz-compend; that it will stimulate the undergraduate to further study in larger works and in good current medical literature; to more careful and thorough clinical observation, and to original investigation."

In a work of this character, in which so much important matter must be sacrificed for the sake of brevity, it may seem somewhat unfair to criticise too harshly a lack of detail. Nevertheless, as the book purports to be an "aid in making a diagnosis," it would seem to us that, in several instances, a more complete enumeration of methods of investigation would have been advisable. Thus, to illustrate, on page 186, under the consideration of the microscopical examination of the sputum, although stating that the detection of elastic tissue is conclusive evidence of bronchial erosion or softening of the parenchyma of the lung, the author describes for its detection only the uncertain method of picking out one of the little masses from the sputum with the forceps and flattening it between two glass slides or two glass plates. No reference is made to the methods employed by von Jaksch, Fenwick, and others.

The article on pleurisy is not adequate to the needs of the student. An important subject, it has been so condensed as to be of but little value. In the differential diagnosis between pleural effusion and croupous pneumonia affecting the left base, no reference is made to the alteration in the former of the position of Traube's semilunar space; neither does the bacteriology of pleurisy receive any consideration.

The above are the main defects of the work, and are but slight when placed in comparison with its general merits. The author has selected well from the standard works upon his subject and has shown a keen knowledge of the requirements of the student in the manner in which he has arranged his material. Especial attention should be called to the excellence of the chapters upon malaria and diseases of the blood and ductless glands, in both of which the text is elucidated by illustrations that cannot fail to be of the utmost value to the student.

In his considerations of diphtheria, pneumonia, and many other affections, there is shown a thorough appreciation of the results attained by recent pathological investigations, and the student who reads these chapters will not be misinformed.

The identification of capillary bronchitis with broncho-pneumonia as one and the same anatomical process is in keeping with the modern view concerning this affection. It seems strange, with our present knowledge of the pathology of this condition, that capillary bronchitis should still be given, by even a few, a distinct and separate pathology;

and it is a matter of congratulation to the future students of the book under consideration that the author has set them aright upon this important subject.

In conclusion we would say that the typographical standard of the work is high, and that the illustrations are unusually well selected and beautifully reproduced. The book is one that no student will regret possessing, and the author can congratulate himself in the production of a work that stands out as a bright star from among its class.

T. G. A.

CLINICAL LECTURES AND ESSAYS ON RICKETS, TUBERCULOSIS, ABDOMINAL TUMORS, AND OTHER SUBJECTS. By SIR WILLIAM JENNER, BART., G.C.B. 8vo., pp. 329. London: MacMillan & Co.

IT IS with much pleasure that we inspect this volume of lectures and essays by the distinguished author; contributions to medical literature which were made from twenty to forty years ago, and now collected into book form. A companion volume, *Lectures on Fever and Diphtheria*, was published about a year ago, and was reviewed in this JOURNAL.

Any extended review of the volume before us is out of place, inasmuch as the matter in it is not new. In reading the three lectures upon rickets, with which the book opens, one cannot but feel what a pleasure it would have been to have listened to so careful and exhaustive a discussion of the subject. The thought arises, too, that these well-known lectures, published more than thirty years ago, embody nearly all that is known of the subject at the present day.

Another interesting lecture is that upon tuberculosis in the child, particularly the portion which treats of the symptoms of acute deposits of tubercle, and that upon chronic tuberculosis of the bronchial and mesenteric lymphatic glands. This study of gland tuberculosis, its symptoms and diagnosis, is of especial value.

Among other essays and lectures in the volume is a lecture upon the modification of heart murmurs by pressure upon the chest; an article upon emphysema of the lungs, contributed by the author to *Reynold's System of Medicine;* another on the same subject, taken from the *Medico-Chirurgical Transactions;* one upon congestion of the heart; a paper on the use of the neutral sulphites, and a series of five lectures upon extra-pelvic tumors of the abdomen. This series, although delivered nearly thirty years ago, is alone well worth the price of the volume. They are noticeable for simplicity and pleasantness of style, and for the value of the subject matter.

In fine, anyone expecting to find in this book ideas which have become obsolete or antiquated is far from grasping the truth. There is nothing of that sort about them. Readers will be amply repaid by the perusal of the volume, and it can hardly fail to add to their medical knowledge.

J. P. C. G.

PROGRESS
OF
MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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CYCLING AND HEART DISEASE.

DR. BENJAMIN WARD RICHARDSON concludes a paper with the following observations: (1) Cycling, when carried on with moderation, may, in so far as the healthy heart is concerned, be permitted or even recommended. (2) In every case of heart disease it is not necessary to exclude cycling. It may even be useful in certain instances when the action of the heart is feeble and when signs of fatty degeneration are found, since increased muscular exercise often improves the condition of muscle, and of no muscle more than the heart itself. (3) As the action of cycling tells directly upon the motion of the heart, the effect it produces on that organ is phenomenally and unexpectedly great, in regard to the work which it gets out of it. (4) The ultimate effect of severe cycling is to increase the size of the heart and to render it irritable and hyper-sensitive to motion, the cycling acting upon it like a stimulant. (5) The over-development of the heart under the continued overaction affects, in turn, the arterial resilience, modifies the natural blood-pressure, and favors degenerative structural change in the organs of the body generally. (6) In persons of timid and nervous natures, "neurotics," the fear incidental to cycling, especially in crowded thoroughfares, is often creative of disturbance and palpitation of the heart, and ought to be taken into account in preventive advice. (7) In giving advice it is often more important to consider the condition of the peripheral rather than the central circulation. Enfeebled or worn-out arteries are more dangerous than the feeble heart, and when connected with a heart that is overactive are seats of danger. This remark also applies to cases of local arterial injury, as in aneurism. (8) Venous enlargement seems rather to be benefited than injured by cycling, and conditions marked by sluggish circulation through veins are often greatly relieved by the exercise. (9) Three sets of acts are most injurious: (*a*) Straining to climb hills and to meet head-winds. (*b*) Excessive fatigue.

(*c*) The prospect of exciting the heart and wearing it out sooner by alcoholic stimulants, to the omission of light, frequently repeated, and judiciously selected foods.—*The Asclepiad*, 1895, No. 43, p. 225.

THE ANTAGONISM BETWEEN MORPHINE AND COCAINE.

DR. JOSEPH WILLIAM STICKLER shows that so far as pigeons are concerned morphine and cocaine are manifestly antagonistic to each other, and that atropine furnishes almost no protection (probably none) against the prompt and violent action of cocaine. With dogs, while two grains of morphine do not successfully antagonize one grain of cocaine, four grains of morphine will serve as an antidote for four grains of cocaine. Upon man their mutual antagonism is clearly shown in the pupils, pulse-rate, respirations, muscular fatigue, drowsiness, moisture of throat, mouth, and skin, and the functional activity of the kidneys. Basing his treatment of a case of opium-poisoning upon these observations, his procedure would be as follows: First an emetic, then one-fourth to one-half of a grain of cocaine hypodermatically; wait twenty minutes, and, if no decided effect has been obtained, the injection of one-quarter of a grain would be repeated. After waiting another twenty minutes this dose would be repeated if there were no manifest improvement. During this time coffee by the mouth or rectum should be administered as a supplementary heart stimulant, and in extreme cases artificial respiration should be employed.—*New York Medical Record*, 1895, No. 1299, p. 433.

SOLANUM CAROLINENSE.

DR. JOHN W. MARCY has seen eight cases of trismus neonatorum, of which seven died; these were in a colored settlement where there was no attempt at cleanliness nor any attention paid to hygiene. The treatment was first a dose of castor oil, which moved the bowels freely; then, as the kidneys did not perform their part, minute doses of pilocarpin hydrochlorate. For the spasmodic condition the tincture of solanum carolinense was given in seven-drop doses every three hours, then every two hours, finally increased to fifteen drops every two or three hours, as was necessary to produce sleep, which would last two or three hours. With a good tincture of solanum, intelligent nursing, and good hygiene, he believes many more children might be saved.—*Philadelphia Polyclinic*, 1895, No. 40, p. 408.

TEMPERATURE CHANGES DURING CHLOROFORM NARCOSIS.

PROF. ANDREA CECCHERELLI has carefully observed twenty patients, noting the duration of inhalation, the initial and lowest temperature, the time required for the fall, the time required for its return to the initial degree, the quantity of chloroform used, the temperature of the room, and the urinary conditions. He concludes that in every anæsthesia the temperature is lower than normal, but the lowering does not continue progressively to the end of chloroformization. The lowering of temperature presents much greater oscillations at the beginning than at the end of narcosis. When the lowest point is reached the temperature continues to oscillate about this point, and the much more these oscillations are accentuated and in relation with a good pulse and respiration, so much the less is there to fear for the life of the patient. When the narcosis is ended the temperature commences to rise, and in general the time which is necessary for it to regain the normal is longer the lower the temperature has fallen and the longer the narcosis has lasted.—*Il Policlinico,* 1895, No. 17, p. 401.

MESCAL BUTTONS.

DRS. D. W. PRENTISS and FRANCIS P. MORGAN have investigated the physiological action of this drug. The Anhalonium Lewinii, from which the buttons are derived, belongs to the natural order of cacteæ (cacti), and is found in the valley of the Rio Grande, in Mexico. The tops of this plant, when dried, constitute the mescal buttons, which are somewhat brittle and hard, but under the action of saliva swell and rapidly become soft, the consistency which they acquire giving somewhat the sensation imparted by slippery-elm. The taste is decidedly disagreeable and nauseous, and very bitter, with a persistent after-taste. A morbid sensation of stinging or tingling is produced in the fauces, which remains for a considerable time after the drug has been swallowed. The powdered drug is odorless when dry, but acquires a nauseous odor when moistened. Lewin found an alkaloidal substance, which he named anhalonin, a brown, syrupy liquid, of an intensely alkaline reaction, slightly soluble in water, but readily with the aid of an acid. When sulphuric acid is used the sulphate of this alkaloid appears as colorless, needle-shaped crystals. Heffner found that this syrupy substance contained three alkaloids, the first probably the same as found by Lewin as brilliant, colorless, needle-shaped crystals, of which the formula is probably $C_{12}H_{15}NO_3$. The second formed non-lustrous, white, rhombic tables. The third was an amorphous and very poisonous alkaloid, left behind in the mother liquor. Further investigation revealed two dark-brown, thick, resinous bodies of the taste and odor of moistened mescal. It may be that the activity of the drug is due mainly to these resinous bodies. The ash is about one-half potassium chloride, a proportion greater than that found in any other plant. The use of the drug by the Kiowas has been persisted in, although the buying and selling of it is unlawful. Of the physiological effects the production of visions is the most interesting. These range from ill-defined flashes of color to most beautiful forms, figures, landscapes, etc., which can, in but few cases, be seen with the eyes open. The amount of pleasure derived from the drug seems to vary inversely with the amount of muscular depression present. These visions are probably brought about by the stimulation of the centres of vision in the brain. The persistent ache and feeling of exhaustion in the occipital region, which was present for several days after one experiment, is of interest. In some cases the reason and will were uninfluenced; in others there were some slowness of expression. Dilatation of the pupil was well marked, slight loss of the power of accommodation and consequent disturbance of vision was noticed. Muscular depression existed in all cases, but in varying degrees. Whether this is brought about by depression of the nerve-centres, peripheral nerves, or their nerve-endings, or of the muscular fibres themselves, it is impossible to state; although the action is probably upon the nervous system and not upon the muscular fibres themselves. In some cases there is partial anæsthesia of the skin, appearing when the effect of the drug begins to wear off. The action of the heart is at first rendered more slow and somewhat weaker in quality; later there is a rise to normal quality and rapidity, which continues during the period of the greatest activity of the drug. When the muscular depression is greatest, slight, if any, depression of the heart is present. The respiration is usually unaffected. Upon the stomach the effect varies from a feeling of uneasiness and fulness to nausea and vomiting. There is also inability to sleep for at least twelve hours after the effects of the drug pass off. There is also a loss of the sense of time. Thus it will be seen that the drug in its physiological action is not identical with any other known drug. Mescal buttons must not be confounded with the intoxicating drink known as "mescal," which is the fermented juice of one or more of the species of agave.—*Therapeutic Gazette*, 1895, No. 9, p. 577.

THE USE OF OXYGEN GAS WITH ETHER FOR ANÆSTHESIA.

DR. CARTER S. COLE makes use of the gas which is passed from the receiver through the wash-bottle into a covered tin case, which is fitted with a rubber face-piece. The amount of gas used was probably about a gallon a minute; the amount of ether for an adult was about six ounces an hour, and half of that quantity for a child. The time required for complete anæsthesia varied from three to fifteen minutes. The time of recovery from fifteen to fifty minutes. Vomiting has not been serious or troublesome in any case, and in the large majority not even nausea has attended the etherization or the recovery. The effect of increasing the flow of oxygen has been to increase the rapidity of the heart's action and *vice versa*. Respiration has been easy and comfortable, and no struggling nor suffocation has been present. The stage of excitement has been moderate and never troublesome. The color has been uniformly excellent, and not in a single instance has any "bluing" been observed. In the cases in which the temperature has been taken no change has been noted. If each operator will compare the amount of ether used, the time required for narcosis, the frequent absence of suffocation, salivation, struggling, nausea, and vomiting, with the conditions which now attend his etherization, he will then be able to draw some conclusions as to the value of the method. A brief report of twenty-one instances in which this method has been employed is subjoined.—*The Medical Record*, 1895, No. 1301, p. 505.

APOCYNUM CANNABINUM.

DR. F. BOUSQUET notes that Glinski and Semenoff in 1894 found that this drug was a violent cardiac poison, which, in large doses, stopped the heart in incomplete systole, and in small doses slowed the beats and strengthened their force. They believed that it contained an active principle which acts as does digitalis, with, however, these differences, that it is not cumulative, and when administered in a determined medicinal dose, it does not give rise to any inconvenience excepting some headache. Froment has reported ten instances of diverse cardiac disease in the stage of imperfect systole in which the pulse was slowed, the rhythm was made regular, the arterial tension was raised, and œdema disappeared; in certain cases it acted when strophanthus and tincture of convallaria had failed. It seems to be useful in certain febrile conditions when the frequency of the pulse gives rise to anxiety, notably in pulmonary tuberculosis, but a large dose may increase an existing diarrhœa. Dabney believes that it can absorb an acute pleurisy. It may be an excellent diuretic to employ in the anasarca of Bright's disease, because it diminishes the total quantity of albumin and the hyaline casts.—*La Presse Médicale*, 1895, No. 143, p. 340.

THE TREATMENT OF DIABETES MELLITUS BY URANIUM NITRATE.

DR. SAMUEL WEST reports three instances in which he has used the drug, and they point to the conclusion that it has a powerful effect upon diabetes. In two cases when the amount of sugar was largely influenced by diet it is probable that it may be found most useful in this class of cases because of its physiological action upon digestion. That the effect is clearly due to the drug is shown by the fact that when dieting and ordinary treatment have produced all the improvement they can in the patient, still further improvement takes place after the administration of the drug, leading in the second case to an entire disappearance of sugar from the urine for a considerable period of time, and, in the first case, to what was practically the same thing. In the third case, also, when the patient had been treated by varieties of drugs, especially by codeine, the administration of uranium caused great improvement. It is believed that its action is due chiefly to the effect it has in checking the rapid digestion of starch and of some forms of albumin, and that it may, perhaps, be especially useful by controlling excessive pancreatic digestion. In the second case the patient attributed the loss of flesh to the drug. This is probably doubtful because the first continued to gain weight while taking much larger doses. The salts in use were the nitrate and double chloride, with quinine. The nitrate is best administered freely diluted with water and after food, commencing with a small dose of one or two grains twice daily, after the chief meal, and increasing the quantity slowly at intervals of a few days until its effect is produced. Given in this way it has not disturbed digestion nor caused any irritation of the stomach or bowels. Prolonged administration apparently does not produce albuminuria.—*The British Medical Journal*, 1895, No. 1808, p. 467.

THE TREATMENT OF MORBUS CORDIS BY THE IODIDES AND OTHER DRUGS WHICH LOWER THE BLOOD-PRESSURE.

DR. A. HAIG shows by pulse-tracings the effects of opium, exercise, and the iodides, including that of ethyl iodide. While it is true that baths, exercise, and drugs dilate the arterioles and capillaries and lessen the work of the heart, we must not forget that in dilating or allowing the dilatation of the capillaries all over the body, they of necessity dilate those of the heart itself, so they not only reduce the work which it has to do, but at the same time improve its interstitial circulation and its nutrition. In certain cases where the whole of the circulatory troubles may be the result of more or less chronic contractions of arterioles and high blood-pressure, the obvious indication is to relax the arterioles and lower the blood-pressure. The danger after opium is, that when you reduce the dose or leave it off, there is a rebound with a very high blood-pressure. The iodides are in the same way followed by a rebound, but this rarely gives much trouble till they have been taken for weeks or perhaps months. The rebound after both opium and the iodides can be prevented by the same means, namely, by giving short courses of sodium salicylate to carry off the accumulated uric acid, the cause of increased arterial tension. In the morbus cordis of middle or later life there are no more important drugs than these, which, like the iodides, relax the arterioles and lower the blood-pressure. On the other hand, such drugs as digitalis, which contract the arterioles and raise the blood-pressure, may do great harm.—*Therapeutic Gazette*, 1895, No. 9, p. 590.

The Reduction of Oxyhæmoglobin in Living Tissues.

Dr. A. Hénocque states that the therapeutic agents which modify the activity of this process act either upon the blood directly, upon the organs which prepare and restore the blood, or upon the trophic nervous centres and consequently upon the ultimate tissue changes. Those which increase the activity of tissue changes are iron, uncooked meat, tonic food, which bring about an immediate building-up of the globules, or others act directly upon the nervous system to strengthen it, as the bitters, strychnine, and douches, or ozone, arsenic, caffeine at the same time improve the nervous system, general nutrition, and hæmatosis. The drugs which diminish the activity of this process are many. The antipyretics, as kairin, antipyrin, exalgin, acetanilid, and paraldehyde. Amyl and sodium nitrite act by destruction of a certain number of red blood-globules or by action on the heat centres. Chloroform used as an anæsthetic is the type of a drug which acts upon the nervous system, producing in the general nutrition a diminution of these changes. Drugs which sometimes increase and at others diminish this activity, according to the pathological condition of the individual, are many; they may be considered as regulators of the activity of these changes. As a type may be cited the alkaline iodides, and it is in emphysema, in disturbances of the pulmonary circulation, and in cyanosis, that these drugs act most efficiently, whether upon the quantity of oxyhæmoglobin or upon the activity of these changes.—*La Presse Médicale*, 1895, No. 43, p. 337.

Diphtheria Antitoxin.

Dr. Sidney Martin believes that the experiments which he has carried out tend to show that the antitoxic serum is capable of counteracting the poisons which are found in the tissues of patients dead of diphtheria. It has only a slight effect on the febrile rise of temperature produced by the albumins, but it completely counteracts the fatty degeneration of the heart produced by these substances, and to a great extent also the nerve degeneration.

Dr. E. W. Goodale, from an analysis of one hundred and five cases, concludes that it does not lessen the incidence of albuminuria; nor will it, if employed too late, prevent anuria. It does not prevent the occurrence of paralysis; in fact, in this series of cases 2.4 per cent. more occurred in those treated by it than in those treated in other ways.

Dr. Alex. Johnston found that no benefit was to be obtained by using antitoxin in cases *in extremis*, and that nothing was gained from its use in very mild cases. His practice became one of selecting cases only moderately severe and well marked for the special treatment.

Mr. Lennox Browne pointed out the fallacies in the conclusions of those who preceded him at the London meeting of the British Medical Association. He concluded by saying that it was abundantly evident that with suitable precautions the results in England at any rate, under serum treatment and under former methods at command, did not at present justify the claims of antitoxin to so high a therapeutical eminence as at foreign centres of observation.—*British Medical Journal*, 1895, No. 1808, p. 461.

MEDICINE.

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Gastrolith.

Manasse (*Berlin. klin. Woch.*, 1895, No. 33) reports the following: A man of forty-four years, a hard drinker, was treated for gastric symptoms ascribed to alcoholism. Eight months later he was again admitted to the hospital, with tuberculosis of the lungs and peritoneum, from which he died. The stomach was adherent to the liver, the adhesion being over an ulcer in the pyloric region, which had advanced almost to perforation. The ulcer had the appearance of a simple chronic ulcer of the stomach. It was evidently caused by a concretion of flattened cylindrical shape, 10 cm. long, 5 cm. wide, and 4 cm. thick. The concretion was very light, weighing only seventy-five grammes. It had a resinous appearance, dark-green color, and laminated structure. Chemical tests showed it to be resinous. The conclusion of the reporter, who ascribed the origin of the calculus to the drinking of furniture-polish containing shellac, was confirmed by the employer of the patient, who stated that the man had long been addicted to the habit, against which he had frequently been warned. The case is similar to one reported by Friedländer, in which there were multiple calculi; perhaps also to one observed by Langenbuch and quoted by Friedländer (*Berliner klin. Wochenschrift*, 1881, No. 1).

THE TRANSMISSION OF VARIOLA.

WASSERMANN has reported two cases having important bearings on the subject of smallpox and vaccination. An Italian woman, twenty years old, and her two-year-old niece developed smallpox simultaneously in Berlin, at a time when there were no other cases in that city. The woman had a very mild attack, the child a typical and severe one. The difference in the severity of the two cases could only be explained by the fact that the woman had been vaccinated once, seventeen years before, while the child was never vaccinated. This was due to the weakness and illness of the patient when she should have been vaccinated. The cause of the infection was finally explained as follows: The patients had not been together for four weeks before they were taken sick. Sixteen days before that the parents of the child were visited by friends from Italy, among them a man and a woman, who, ten days before the beginning of the disease, visited the grown patient for half an hour. Five days before leaving home the woman had in her arms a child with a skin eruption, and she wore the same clothes in Berlin that she wore on the former occasion. Correspondence with the Italian physicians elicited the information that smallpox existed at the time in the village from which the second woman came. As the latter was vaccinated she was able to carry the virus with her unharmed and transmit the disease to a third person. The incident shows the uselessness of quarantine in such a case unless thorough disinfection is added.

The patients were treated in the Institute for Infectious Diseases. All possible methods were used for cultivating micro-organisms from the pustules, but with negative results. This agrees with previous experiments of Koch. It is interesting in connection with the fact that vaccine pustules always contain micro-organisms, which represent, therefore, a secondary infection. As the pustules are without bacteria (except in hemorrhagic cases, in which septic germs are present), the so-called suppurative fever is believed by Wassermann to be a symptom *sui generis*, a part of the variolous process. In the woman here reported there was no "suppurative fever," though there were pustules, and the author thinks that the previous vaccination had left enough immunity to prevent the development of the severe symptoms, though not enough to prevent infection altogether. In the treatment of the disease Wasserman used silver nitrate paste, and got very good results. That aseptic treatment may prevent a serious part of the deformity common in smallpox, follows from the originally sterile condition of the pustules. —*Berliner klin. Wochenschrift*, 1895, No. 35.

THE SYMPTOMATOLOGY OF CEREBELLAR DISEASE.

FRIEDBERG (*Berliner klin. Woch.*, 1895, No. 33), on the ground of nine new cases, gives the following conclusions regarding cerebellar disease. They confirm the conclusions of Luciani, based on experiments on animals. The important symptoms are vomiting, emaciation, occipital pain, dizziness, especially on standing and walking; reeling and staggering gait; later, inability to walk or stand; finally forced movements and spasms in the flexors and extensors. The author lays special stress on stiff neck, especially when hydrocephalus and meningitis can be excluded.

NECROSIS OF THE MANDIBLE IN TABES.

KALISCHER (*Deutsche med. Wochenschrift*, 1895, No. 19) reports the case of a man of forty-two, without syphilitic history, who had tabetic symptoms for ten years. In December, 1893, three sound teeth (two bicuspids and a molar) in the lower jaw became loose and soon after fell out. The gum was somewhat soft, but not inflamed. There was no pain at first, but a week after the teeth fell out pain, redness, and swelling began, sanguinolent, offensive pus was discharged and continued until a piece of necrosed bone, two and one half cm. long, was removed. The condition was considered to be trophic, due to a participation of the trigeminus in the tabetic process. Rosin, who searched the literature, could find records of only 22 cases of tabes with trophic lesions of the jaws, including nine cases of necrosis. Kalischer gives numerous references bearing on this rare condition.

INTERMITTENT PNEUMONIA.

MADER (*Wiener klinische Wochenschrift*, 1895, No. 22) reports the case of a Viennese physician, forty-one years old, who was suddenly seized with a chill, followed by fever, headache, and bilious vomiting. As influenza prevailed at the time, it was supposed at first the patient had that disease, but on the second day Mader found physical signs of pneumonia in the left base. The disease lasted six days, with certain remarkable features. The temperature was intermittent, having five attacks lasting respectively forty-eight, twelve, fifteen, fifteen, and seven hours, rising almost to 104° F., alternating with intermissions of about twelve hours' duration each. The course was, therefore, somewhat like malarial quotidian, but not exactly like the latter, as the author says. There was neither chill nor sweating. Enlargement of the spleen in the attacks was doubtful. The infiltration seemed to recede in the first intermission, increase in the second attack, and then recede. After that the condition of the consolidation was masked by pleural exudate, but from the intermittence of the rusty sputum it seemed that the local process had an intermittent course. In addition there was periodic headache. Bacteriological examination of the sputum by Paltauf and Tannenheim showed diplococcus pneumoniæ in almost pure culture. Streptococci and influenza bacilli were not present. Examination of the blood for malarial parasites was neglected. The author's explanation of this interesting case has at least the merit of boldness. The patient when a child had malarial fever for two years. After that he lived in Vienna, where malaria is rare, and never had malarial symptoms. Mader thinks that the parasites produce changes in the nerves or blood, which cause later disease to assume an intermittent character. As he says, "the belief that long-continued changes in the blood are produced by infection of various kinds is no longer strange," and it is also "well known that by frequent repetition the nervous system acquires automatic powers." [Strange, then, that intermittent pneumonia is so rare.]

DISSEMINATED LESIONS IN LEAD-POISONING.

JANOWSKI (*Neurologisches Centralblatt*, 1895, No. 7) describes a case of lead-poisoning with interesting features. The patient's occupation was soldering water-pipes, a trade not usually considered as exposed to lead-poisoning, though mentioned as such by Gowers. The lead used by the patient was red-lead, mixed with shellac. It seems that the man was in the habit of eating without washing his hands. The diagnosis was confirmed by the blue line and the presence of lead in the urine. Clinically, the intoxication was interesting in the first place, because, without any discoverable reason, the characteristic hard pulse suddenly became irregular and very small, with embryocardia. This the author ascribed to the effects of the lead on the cardiac ganglia. In the same case there was besides drop-wrist the hitherto undescribed symptom of paralysis of the (right) facial nerve, or rather its lower two branches. There was also contraction of the right pupil, with diminished reaction to light. A similar affection has been reported by W. Fitz. The author explains it by an implication of the cervical sympathetic. Causes for the various paralyses other than lead-poisoning could not be found.

OBSERVATIONS ON EXCESSIVE INTESTINAL PUTREFACTION.

HERTER and **SMITH** make a valuable contribution to the pathology of the intestine (*New York Medical Journal*, June 22, 29; July 6, 13, 20, 1895) which, if it does not reach any definite conclusions, at least furnishes many clinical data, and shows the importance of further researches in this difficult field. From its fulness of detail the article does not permit an adequate review in brief space. The authors give the results of investigations in the amount of preformed and combined sulphates in the urine, of indican, urea, and uric acid, in many cases of intestinal disease; the value of various intestinal symptoms, such as flatus, pain, alterations in the number and character of the stools, and the remote symptoms of intestinal indigestion. They then describe the relation of excessive intestinal putrefaction to epilepsy, melancholia, kidney disease, and other pathological conditions. The treatment, both dietetic and medicinal, is spoken of at length. The remarks on some of the commoner "intestinal antiseptics" are especially valuable.

ACUTE LEUKÆMIA.

SEELIG (*Deutsches Archiv für klin. Med.*, Bd. 54, p. 537) adds to the small number hitherto reported (twenty-nine up to 1893) a new case of acute leukæmia. A boy of eleven years had been ill two years with post-scarlatinous nephritis. More recently he lost strength, had headache, nausea, and gastric disturbances. The spleen was enlarged. The blood examination was negative. When seen sixteen days later he had œdema of the eyelids, enlarged lymphatic glands, swollen and bleeding gums. The blood showed great increase of leucocytes—1:5.4. Pain and tenderness of the tibia, subcutaneous nodules, and hemorrhages in the skin followed. Death occurred four days after the leukæmic condition was discovered, twenty days after the negative examination of the blood. The autopsy revealed characteristic enlargement of the spleen, liver, and lymphatic glands; lymphoid marrow in the long bones; hyperplasia of lymphatic tissue in the mucous membrane of the stomach and intestines; lymphomata in the kidneys, subcutaneous tissue, gums, and epicardium—the latter being unusually large;

ecchymoses in the skin and serous membranes. The description of the blood is not intelligible. It is stated that myelocytes were present in large numbers, but that "granulations in Ehrlich's sense" could not be found. [The so-called myelocytes were probably lymphocytes of unusual size.] Eosinophile cells were absent, and Charcot's crystals did not form post-mortem. There were a few nucleated red corpuscles. A later examination showed that lymphocytes preponderated, and the same was true of the blood examined after death.

The author suggests that the case was originally one of pseudoleukæmia, and remarks that the case shows how impossible it is to recognize the primary seat of a leukæmia from the condition of the blood.

CARDIAC ARHYTHMIA IN CHILDHOOD.

HEUBNER (*Zeitschrift für klin. Med.*, Bd. xxvi. H. 5, u. 6) claims that functional arhythmia is much commoner in childhood than has been thought. A number of examples are described. The following classification indicates the most common causes: 1. Arhythmia from poisoning, as by digitalis, stramonium, and opium. 2. From digestive disturbances (auto-intoxication and hydroencephaloid). 3. Diseases of the abdominal organs with vomiting, but without other evidences of auto-intoxication. 4. From infectious diseases, in the onset, the acme, or in convalescence. 5. Anæmia and nervousness. 6. From the irritation of intestinal parasites. 7. Arhythmia after excitement, in sleep, and after bathing. 8. Idiopathic arhythmia.

CHRONIC COFFEE INTOXICATION.

IN a recent paper read before the Société des Hôpitaux, GILLES DE TOURETTE (*Gazette Médicale de Paris*, July 20, 1895) calls attention to the fact that chronic coffee-poisoning is much more common than is generally supposed, and is generally confounded with alcoholic disturbances. The poison acts principally on the stomach and the nervous system.

The coffee dyspepsia resembles the alcoholic very much; there are as symptoms, morning expectoration of mucus, pain in the epigastric region, and marked anorexia. The disgust for food finally becomes so great that the patient can only take coffee, or bread soaked in coffee, and in this manner the poisoning rapidly increases in severity; nausea and vomiting, with acid pyrosis next appear, and the patient becomes much emaciated. On the side of the circulation a slowing of the pulse is usually observed, palpitation being rare.

The nervous symptoms are marked. Insomnia is common, or if sleep occurs it is often accompanied by terrifying dreams. General tremor is often present, with fibrillary twitching of the lips and tongue. Cramps in the limbs may occur. The general sensibility is diminished in a certain number of cases. Paralyses have not been observed. In children, arrest of development takes place.

The stoppage of the coffee generally results in a rapid cure, much more rapid than from similar troubles due to alcohol.

THE USE OF NORMAL SALT SOLUTION INJECTIONS IN HEART FAILURE DURING CHLOROFORM NARCOSIS.

REIN (*Cent. für Chir.*, 1895, No. 17) calls attention to the fact that this method of treating heart failure during chloroform anæsthesia has long been in vogue in Russia, especially in Moscow. It was first suggested by Professor Bobroff in 1887; it was afterward studied experimentally where it was found to act, increasing the blood-pressure immediately on injection, and even when the heart had stopped beating and respiration began to fail the injection would sometimes bring the animal back to life.

These results led to its use by Bobroff in cases of syncope during chloroform narcosis, and with good results, so that he referred to it as a powerful means, and outside of it, he used only auto-transfusion and artificial respiration according to Sylvester's method. The method has become widespread in Russia, and has rendered good service.

THE GASTRIC JUICE IN HANOT'S DISEASE.

KIRIKOW has recently examined the gastric juice in six cases of hypertrophic cirrhosis with icterus. He finds that the total acidity of the stomach contents is generally diminished. The strength of the filtrate in total hydrochloric acid is also diminished, and is a little less than the total acidity. The free hydrochloric acid is much diminished, often absent.

The digestive power of the stomach contents is much enfeebled, and sometimes entirely abolished. The activity of the curdling ferment is diminished. Small quantities of organic acids are present in the stomach juice.

In spite of conditions favoring sugar formation, one finds among the products of starch digestion erythrodextrine. Iodide of potassium given by the stomach is eliminated by the saliva more slowly than is normally the case. The motor functions of the organ remain satisfactory. Biliary pigment was noted several times in the stomach contents.—*Archives Générales de Médecine*, September, 1895.

GONORRHŒAL PLEURISY.

IN a recent article FAITOUT reviews all the reported cases of this nature. As a result of this review he finds that, though a good many cases are reported, very few present sufficient evidence to be classed as gonorrhœal pleurisy. One case, however, reported by Bordoni-Uffreduzi, seems to definitely prove that gonorrhœal pleurisy can occur. The case was one of a young girl, aged eleven years, who was assaulted by an individual with gonorrhœa. Some days afterward she was attacked with severe polyarthritis and later a double pleurisy developed. She also showed symptoms of endo- and pericarditis. Dr. Mazza, on examination of cover-slips from the pleural exudate, found numerous organisms morphologically resembling gonococci within the leucocytes. Furthermore, he was able by Wertheim's method to cultivate the organism and show that he was dealing with a pure culture of Neisser's coccus. The author comments on the need of further bacteriological investigation on this subject.—*Gazette Médicale de Paris*, October 5, 1895.

SURGERY.

UNDER THE CHARGE OF

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HYDROTHERAPY IN APPENDICITIS.

CLARK reports in the *Buffalo Medical and Surgical Journal*, vol. xxxiv., No. 5, seven consecutive cases of appendicitis, treated exclusively by hydrotherapy, all of which recovered. The treatment was as follows: Cloths about four inches square, wet in cold water, were applied to the right iliac region, and changed, if necessary, every three to five minutes, until the pain was completely relieved. Cold, *not warm*, water enemata were given every one to three hours night and day according to the severity of the case, and continued until the cure was complete. In some cases an initial dose of an antipyretic was administered if the temperature was high, but beyond this no medicine whatever was given. The patients were all put upon a liquid diet until convalescent.

In conclusion, the author believes that *cold* water, used *early* and *freely* and *often*, in the manner indicated, should first be tried; and, if the symptoms do not improve within twenty-four hours, surgical measures should be considered.

THE QUESTION OF CATGUT INFECTION.

LAUENSTEIN concludes an article on this subject in the *Archiv für klinische Chirurgie*, Band l. Heft 2, as follows:

1. Clinical observation shows that cases of wound infection occur from the catgut used in the wound.

2. The proof whether in a given case the catgut has been the source of infection is difficult of demonstration.

3. It can be shown, however, that the so-called sterile catgut of commerce contains germs that are ready to develop.

4. As long as the so-called sterile catgut contains germs in a condition to develop, so long will there be the suspicion that the wound infection comes from this source.

SEPTIC INFECTION WITHIN THE CRANIUM.

PARK, in a very interesting article on this subject (*The Chicago Medical Recorder*, 1895, vol. viii., No. 2), enumerates the various bacteria which are most commonly found in brain abscesses and intracranial suppurations, and the paths through which these infections are produced.

In regard to diagnosis, the author says all acute abscesses are surrounded by a zone of encephalitis which so confuses the symptoms as to render a discrimination between the two impossible. Suppurating meningitis or breaking-down thrombi may also closely simulate abscess—in fact, all these conditions may be present in the same case. An abscess situated near the surface is prone to cause leptomeningitis, and, in the event of rupture, the latter becomes general and the symptoms of this affection will predominate. In cases of meningitis there are apt to be high temperature without marked remissions, rapid pulse, and irritability; the pulse of encephalitis is slow. The symptoms of sinus thrombosis, especially in the stage of disintegration, are: high temperature with marked remissions, rapid, weak pulse, frequent chills followed by copious sweats, symptoms of pulmonary infarct, diarrhœa, pain, and tenderness in the posterior cervical triangles and along the jugular on the affected side. If these conditions are associated, the symptoms of thrombosis will usually prevail, although there may be retraction of the head from basal meningitis. When thrombosis and abscess are both present, the former is the more serious condition, and will need attention first.

The distinctive features of brain tumor are: absence of a cause for infection, slow progress of symptoms, more definite localizing phenomena, progressive involvement of cranial nerves, pronounced optic neuritis, absence of chills, and alternating periods of mitigation of symptoms.

Contribution to the Treatment of Superficial Syphilitic Adhesion between the Soft Palate and the Wall of the Pharynx.

Lieven describes the following method of operation in cases in which syphilitic lesions of the throat have been followed by adhesion between the soft palate and the wall of the pharynx (*Münchener medicinische Wochenschrift*, 1895, No. 21): After cutting the palate free, as well as all bands of adhesion, the posterior nares are powdered with europhen and packed with europhen gauze for ten days. A rubber bag, like a colpeurynter, is then introduced for several hours daily at first, and later less frequently. The bag is put in position by attaching the tube to a soft catheter which is passed through the nose into the throat. When in position the bag is distended with air.

In very old cases of extensive destruction of the posterior wall of the pharynx and wasting of the pharyngeal muscles and those of the palate, it would be better not to operate, as it can benefit the patient but little.

Umbilical Hernia of the Newborn and Infants.

Cahier, in an elaborate study of this subject (*Revue de Chirurgie*, 1895, No. 4), says:

1. In the children of either the rich or poor, the radical cure of umbilical hernia must be tried up to the age of eighteen months or two years, unless there be certain exceptional contraindications.
2. In these young patients the use of the conical pad and the elastic spring

are to be avoided. A hemispherical hard-rubber pad supported on a metal plate and held in place by a bandage is the best appliance. The apparatus should be changed every eight or ten days.

3. In children two to seven years of age, belonging to well-to-do families, who are carefully looked after, an attempt may still be made to cure the hernia by bandage.

4. Children of the same age, whose parents are poor, and consequently unable to give the necessary care to the child, or if they are negligent or ignorant, should not be subjected to this treatment if there is any tendency for the hernia to increase or to give trouble.

5. The umbilical hernias which persist after the seventh year, in spite of the careful use of the bandage, may be treated by other measures.

The following cases should be subjected to operation:

1. Umbilical hernias of the newborn if strangulation occurs, or if persistent gastro-intestinal troubles are induced which seem to be dependent upon the hernia.
2. The hernias in children of from two to seven years present analogous indications.
3. Children of this age, belonging to poor families, who do not receive proper attention, if at the end of a year or eighteen months the hernia is still of the same size.
4. Hernias that persist after the seventh year, that are rebellious to treatment and tend to increase in size.
5. If the skin covering the hernia is inflamed or ulcerated.
6. If the hernia interferes with the occupation that the person has selected.
7. Umbilical hernias with a large ring.
8. Those that are subject to strangulation or inflammatory accidents.
9. Those that cause pain and gastro-intestinal disorders, and consequently interfere with the development of the child.

A New Method of Operating for the Cure of Superficial Varicose Veins.

Stoker advocates (*Dublin Journal of Med. Science,* 1895, 3 s. No. cclxxix.) the following method of operating for superficial varicose veins of the leg, because—1, ligature of veins is a proceeding attended by certain risks; 2, the old method of ligation, division, and suture of the skin is frequently followed by troublesome inflammation and slow healing; and, 3, if the ligature is unnecessary no argument need be used in its favor.

After thorough aseptic preparation the skin is incised for about half an inch in the direction of the long axis of the limb over the vein. The superficial fascia is divided with an oculist's scissors, the vein lifted and a quarter of an inch excised, after which gentle pressure is applied by a sponge. When this has been repeated at all necessary points, the parts are irrigated with sublimate solution and flat sterilized gauze compresses applied to each incision, and the whole covered with a suitable dressing. The author prefers to operate without an anæsthetic, unless the patient positively objects. The dressings need not be changed for a week.

The author formulates the important steps of his method as follows:

1. Due care in preparation, both by rest in the horizontal position for some days and by suitable purgation.

2. Careful cleansing of the skin by such methods as may commend themselves to each surgeon.

3. Attention to the points indicated in the operation. It should be remembered that owing to the low tension of the blood in the veins, very slight pressure is required to control hemorrhage from them, and that, therefore, thick compresses and tight bandages subsequent to operation are to be avoided; they are not required, and only serve to impede capillary circulation and delay repair.

4. Rest in the horizontal position for at least a week after operation, during which time the dressings should not be disturbed, unless pain, rise of temperature, or discharge indicates their removal.

Splenectomy for Echinococcus of the Spleen.

Hahn describes a case of splenectomy for echinococcus, and adds some remarks on the treatment of this condition.

The patient was a woman, thirty-five years of age, who first noticed a tumor in the left side of the abdomen in November, 1894. It increased in size until it was as large as a child's head. In February, 1895, an operation was performed for the removal of the growth. A long incision was made in the middle line, half above and half below the umbilicus. The tumor was found to involve the spleen to such a degree that its entire removal was decided upon. The pedicle was ligated in several portions with fine silk, and the tumor removed. The peritoneum was closed with catgut and the abdominal wound with silk sutures. The spleen and the tumor together weighed 850 grains. The patient made a good recovery.

In regard to the operative treatment of echinococcus of the spleen, Mosler has collected fifteen cases, most of which were aspirated. Of these six died and six recovered; the result in the other three cases being unknown. According to Trinkler, the mortality of cases operated upon in preantiseptic and antiseptic times is 30 per cent.—preantiseptic mortality 42 per cent., antiseptic mortality 21.7 per cent. Hahn has collected seven cases of extirpation of the spleen for echinococcus, five of which recovered promptly. Two of the cases resulted fatally owing to extensive adhesions to the stomach, bowel, and diaphragm.

Puncture as a method of treating echinococcus cysts of the spleen, with or without aspiration or injection, as well as the method of puncture recommended by Recamier and Simon, is to be condemned on account of the unfavorable results recorded in the cases so far reported.

It has been shown that the removal of the spleen for such conditions as the one under discussion is not attended with any serious consequences as is the case in leukæmia, and, as the organ is more or less destroyed and functionless from the encroachment of the disease, its total removal is preferable to enucleation of the tumor and returning the spleen to the abdomen on account of hemorrhage. In a case in which this method was adopted, Snegirjeff was obliged later to perform splenectomy on account of hemorrhage.

If, for any reason, the tumor cannot be removed, it should be stitched to the abdominal incision, and opened either at once or at a subsequent operation as seems indicated.

GENITAL HYPERÆSTHESIA ASSOCIATED WITH SHORTNESS OF THE FRENUM GLANDIS.

FÉRÉ calls attention (*Revue de Chirurgie*, 1895, No. 4) to the effects of an unduly short frenum of the penis, which, he says, not only interferes with coitus, but causes so much deviation of the meatus that fecundation may be impossible. It also causes genital hyperæsthesia which results in premature ejaculation. The author states that the condition may also give rise to sexual perversion. He describes a case in support of his views.

The condition is to be removed by dividing the frenum to the necessary extent.

A STUDY ON LYMPHANGITIS OF ANO-RECTAL ORIGIN.

QUÉNU contributes an interesting article on this subject to the *Bull. et Mem. de la Soc. Chir. de Paris,* T. xx. p. 325, in which the following appears:

The lymph vessels of the anus and rectum belong to three groups. The lowest branches originate from a plexus which lies beneath the sphincter and cross the ischio-rectal fossa from behind forward, and empty in the glands of the groin. The second group ends in the lymph glands of the meso-rectum. A third group perforates the wall of the rectum above the levator and reaches the pelvic glands, which are situated near the hypogastric vein on a level with the ischiatic notch.

There are accordingly three groups of abscesses in the neighborhood of the rectum: 1. Subcutaneous abscesses along the lymph vessels of the lower group. 2. Deep abscesses around the lymph glands and vessels of the meso-rectum. They tend to work their way downward and posteriorly in the median line to the surface. 3. Abscesses of the upper group above the levator ani. They may break through the latter and open to one side and behind the anus. Sometimes they perforate into neighboring cavities, *e. g.*, the vagina; and not infrequently they come through the ischiatic notch and appear in the gluteal region. In deep-lying abscesses one must, in the absence of other cause, look for the point of entrance of the infection in the neighborhood of the anus or rectum. Such abscesses do not always come from perforation of the wall of the rectum, but from lymphangitis and lymphadenitis.

A FATAL CASE OF EXCISION OF THE GASSERIAN GANGLION.

GERSTER (*Med. Record,* June 29, 1895) reports an instructive case in which death occurred after excision of the Gasserian ganglion.

The patient was a robust man upon whom Carnochan's operation had been performed by the author two years previously. This relieved him from attacks of infraorbital neuralgia for about a year, when he was again operated on, the entire cicatrix being removed and relief again obtained. When admitted to the hospital his general condition was good; with the exception of a lagophthalmos and a shallow corneal ulcer, corresponding to the side of the former operation, all his organs were in a normal state.

Hartley's operation was performed under chloroform anæsthesia. The patient's skull was very large, its thickness and the normal processes and depressions were all very strongly developed, a circumstance which is of practical importance, as it increases the facility with which the operation can be performed.

After the separation of an omega-shaped osteo-cutaneous flap the middle meningeal artery was found intact, and no trouble was encountered from it. As the convolutions and sulci of this brain were very strongly developed, the inner surface of the temporal fossa was correspondingly uneven, and, as the dura was intimately adherent, the stripping up necessary for the exposure of the Gasserian ganglion was not easy. An elevator had to be used here and there, until finally the foramen ovale was reached. Much cerebrospinal fluid had escaped after the tearing of the dura, and hence the bottom of the cavity could be very well exposed by the aid of Hartley's lever.

In liberating the inframaxillary branch of the nerve, suddenly profuse venous hemorrhage was encountered, which was easily controlled by packing a small strip of iodoform gauze into the innermost angle of the cavity, but which recurred each time when the packing was removed. The cavity was therefore left with a packing of iodoform gauze in it, the flap returned, and an external dressing applied. The operation had lasted seventy minutes; toward the end the pulse had fallen from 78 to 40, and had become somewhat soft. During the next twenty-four hours the patient vomited twice, but otherwise he felt well, was fully conscious and without pain. On the first day after operation the patient was somewhat drowsy, and answered questions slowly but rationally. Pulse 84; temperature 100.2° F. Toward evening there was light delirium with some restlessness. Second day after operation he was more quiet; temperature 100.6° F.; respiration 22; pulse 96.

On the third day the patient was again chloroformed, the dressing, which was slightly soaked with blood and serum, was removed, the flap raised, and the packing extracted. The wound was healthy, the exposed surface of the brain was pale and entirely normal-looking. There was no hemorrhage of any amount at this time. The second branch of the nerve greatly attenuated, but clearly identified by its entrance into the round foramen, was secured by a silk ligature, likewise the third branch. Then the dural sheath enveloping the roots of these nerves was split with the knife, the distal ends of the nerves were divided, and an attempt was made to avulse the ganglion. This did not succeed as the nerves gave way, and the ganglion had to be removed in pieces with forceps and a small scalpel and scissors. The attenuation of the second branch might have been due to the earlier operations. A strip of iodoform was placed in the posterior angle of the wound, which was then sutured with catgut and dressed. At 8 P.M. temperature 102° F.; pulse 96. Patient slept fairly well. There was a gradual rise of temperature with remissions from the fourth day. On the sixth day after operation the pulse was as on the previous day, at times irregular, intermittent, and slow, while the temperature was 102° F. The patient was restless, at times delirious, but spoke perfectly clear and rational, and was free from pain. The dressings were removed, and a clean, sweet, and dry wound was found, from the bottom of which, on removal of the deep packing, about a drachm of pale, entirely clear serum escaped. The brain was found still considerably retracted, its surface was pale and pulsating. Exploratory punctures revealed no abscess. The wound was closed and a traumatic encephalitis was assumed to be the explanation of the patient's condition. The temperature remained at 102° F., pulse varying above and below 50, and patient remained conscious to within fifteen minutes of his death, which occurred eight days after operation. The autopsy revealed no signs of meningitis. A focus of softening was found in the basal portion of the temporo-sphenoidal lobe, corresponding to the deepest part of the wound cavity and overlying the greater wing of the sphenoid, which involved the cortex and contained débris of brain-matter of the color of crushed strawberries.

The author draws the following conclusions: 1. That in certain individuals, on account of local peculiarities of the skull, Hartley's operation may be a very difficult undertaking. Hemorrhage may not only be an impediment to safe operation (Keen), but will also be dangerous, producing acute anæmia (shock). 2. Bruising of the brain-matter—be the pulpification due to direct mechanical injury or to local hemorrhage, or both—is a danger not to be slighted.

OTOLOGY.

UNDER THE CHARGE OF

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TEETH AND EARS.

BARCLAY calls attention to earache from dental irritation in large children and in adults. In all cases of earache in which the tissues of the ear appear normal, oral irritation should be sought for, and if found removed.—*St. Louis Courier of Medicine*, September, 1895.

OTIC FACIAL PARALYSIS.

Facial paralysis of the so-called rheumatic variety will be found generally associated with acute otitis media, if not caused by it (GELLÉ). This fact is illustrated in a case reported by BUNDY (*Phila. Polyclinic*, Sept. 28, 1895). In all cases of supposed "rheumatic" facial palsy the ear should be carefully examined, and almost invariably the cause of the paralysis of the face will be found to lie in the middle ear.

ACUTE OTITIS MEDIA IN PNEUMONIA.

Acute otitis media as a complication of pneumonia is described by BALL, and the attention of general physicians called to the fact that the symptoms caused by the ear disease are erroneously referred at times to brain disease.

(*Medical News*, September 21, 1895.) Of course no relief can be given to the patient suffering with the aural disease named until the ear can be examined with an otoscope, a correct diagnosis made, and paracentesis of the membrana tympani performed. Spontaneous evacuation of pus through the Eustachian tube in acute otitis media does not take place and cannot be relied upon for relief as Dr. Ball appears to think it could.

ANTISEPTIC DRAINAGE IN ACUTE OTITIS MEDIA.

The beneficial results of antiseptic drainage of the acutely inflamed ear as set forth within the past year by Gradenigo and Pes, and by Lermoyez and Helme (see this JOURNAL, July, 1895, p. 104), are again set forth in recent articles by these investigators (*Annales des Maladies de l'Oreille*, vol. xxi. No. 7). After spontaneous rupture or after paracentesis of the membrane it is better to simply stop the meatus with a tuft of iodoform gauze and let it alone than to syringe or swab the ear. The streptococcus will thus escape without much risk of secondary infection of the drum-cavity from the external auditory canal by means of the staphylococcus.

EAR-MASSAGE.

Massage of the ear in various ways has been recommended by many aurists in catarrhal deafness, the object being to bring passive motion to act upon the membrana tympani and the ossicula. **RANDALL** has recently recommended "pneumatic massage by the finger tip in catarrhal deafness, as a substitute for so-called tragus pressure." (*Phila. Polyclinic*, September 28, 1895.) [For many years I have observed at times that patients had taught themselves to practice auto-massage by finger-tip suction in the meatus for the relief of catarrhal deafness with considerable success.]

CHRONIC PURULENT OTITIS MEDIA.

KRETSCHMANN describes a form of chronic purulency of the middle ear in which the caries is located chiefly in the floor of the drum-cavity, in the so-called "*recessus hypotympanicus.*" On account of the proximity of the bulb of the jugular and carotid canal this form of purulency in the ear becomes a dangerous one. (*Archiv f. Ohrenh.*, September, 1895.) Wolf, of Frankfurt-on-the-Main, proposes to treat this form of purulency by curetting with a sharp spoon the granulations usually accompanying this form of purulency of the middle ear. (Ibid.) Meier observed a case of suppurating thrombus of the bulb of the jugular and of the internal jugular with granulations of the hypotympanic recess. In the same case the mastoid cavity was found filled with granulations and pus, and communicating with it an extra-dural abscess. Incision into the transverse sinus and cerebellum gave no good results, death ensuing two days afterward. Panse and Leutert (Ibid.) maintain that reinfection of the cavities operated upon in and about the ear occurs through the Eustachian tube, and therefore the former proposes to cause the remnant of the membrana tympani to adhere to the promontory and thus cut off the passage-way from the tube to the drum-cavity. Leutert advocates the method now in vogue in Halle, viz., obliteration of the tympanic mouth of the Eustachian tube.—*Archiv f. Ohrenheilk*, September, 1895.

In an article on the neglect of suppurative ear disease, ERSKINE (*Glasgow Medical Journal*, July, 1895) condemns postponement of treatment of suppuration of the ear, tamponing a running ear with cotton, the idea of its being dangerous to stop a discharge from the ear, the use of various nostra advertised for the cure of ear diseases, since there is "no panacea for ear diseases," and recommends that medical students be instructed in clinical otology, and that "the ear should always be examined in the early stage of the illnesses of infants and young children and in all infectious fevers and throat affections."

SEPTIC OTITIC SINUS-PHLEBITIS.

Septic sinus-phlebitis, from acute or subacute purulent otitis media, seems sometimes to occur and get well without the detection of pus in the mastoid antrum and cells, and without any surgical interference with the sinus or jugular vein, as in a case reported by ESKRIDGE (*Medical News*, October 5, 1895). [The path of septic invasion in such cases must be directly from the middle ear to the sinus by lymphatic and capillary veins.] It is worthy of note that septic phlebitis in the lateral sinus often occurs in connection with acute otitis media, as in three cases reported by Voss. Delay in operating is dangerous. But death may ensue even when an operation is performed promptly upon the sinus before grave symptoms arise, as in a case reported by him. In such cases a profound osteomyelitis sets in. Of five cases operated upon by Voss, two proved fatal, one occurring in chronic and one in acute purulent otitis media.—*Archiv f. Ohrenh.*, September, 1895, Bd. 39.

CEREBELLAR ABSCESS.

BACON reports a case of cerebellar abscess in a man, aged thirty-three years, the result of chronic suppuration in the right middle ear. Severe headache, especially on the left side, vomiting, intense vertigo on motion, staggering gait, a tendency to fall toward the *left*, paralysis of the right side of the face, peripheral in character, normal knee-jerks, and no difficulty of speech or swallowing, a pulse of 50 to 60 a minute, and a temperature of not more than 99.6° F. lead to the diagnosis of an abscess in the right side of the cerebellum. It was thought that the right optic disk was œdematous. The lateral sinus was therefore exposed by operation, but found to be normal. The cranial wall four inches behind the mastoid was then trephined, a disk 2 c.mm in diameter being removed. The abscess cavity was not reached, however. The patient died three weeks after the operation. Post-mortem examination revealed an abscess in the right cerebellar hemisphere 4.5 cm. long by 3 cm. wide, containing thick, fetid pus.—THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, August, 1895.

OTITIC CEREBRAL ABSCESS.

According to OPPENHEIM (*Fortschritte der Medicin*, September 15, 1895), aphasia occurring in otitic abscess of the left temporal lobe is due to a lesion of the *sensory speech centre, i. e.*, an interruption in the parts connecting this part with other cortical areas. True motor aphasia from otitic abscess of the left temporal lobe has not yet been reported, according to Oppenheim. In some instances the rapid extension of the pus collection with consequent œdema and softening may interfere with the motor speech-region and give rise to the impression that we are confronted with a case of true motor aphasia. Sometimes the abscess severs the pathways connecting the tone-picture (*klangbild*) centre with the optic centre. In such an instance the patient presents symptoms of optic or optic-acoustic aphasia, as in a case reported by JANSEN (*Berlin klin. Wochenschr.*, 1895, 35), in which the patient cannot employ nor comprehend a word expressive of an object without seeing the corresponding object. Questions relating to *subjective* conditions, however, are understood and correctly answered.

In a case of non-otitic brain-abscess, reported by ESKRIDGE (*Medical News*, July 27, 1895), the surface temperature was subnormal by 1°–1.5° F. on the same side of the head as the brain-abscess, the latter being on the non-paretic side. This *temperature* symptom might aid in localizing a cerebral abscess in any instance, though it cannot be considered a constant symptom, though valuable when it occurs.

DERMATOLOGY.

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DIET IN THE ETIOLOGY AND TREATMENT OF DISEASES OF THE SKIN.

In a paper read before the British Medical Association (*British Journal of Dermatology*, October, 1895) WALTER G. SMITH presents the following conclusions upon this subject:

1. Very few skin diseases are directly traceable to dietetic causes, but improper diet may aggravate existing eruptions. Idiosyncrasy must be largely allowed for.

2. The diseases that may so arise are of a transitory character and mostly belong to the class of erythemata.

3. Diet has very little influence in promoting the cure of cutaneous eruptions. The results are far behind popular expectations, even in such cases as acne rosacea, where we are led to hope for much.

4. Avoidance of alcohol, regulation of the bowels, and the cure of anæmia are of infinitely greater importance than special dieting in the management of diseases of the skin.

AUTOINTOXICATION AND SKIN DISEASES.

BLASCHKO reviews at length (*Berliner klinik,* September, 1895) the evidence for the possible origin of skin diseases through the introduction into the circulation of toxic substances formed in the organism itself. The occurrence of various forms of eruption after the ingestion of certain drugs and alimentary substances lends probability to the view that some diseases of the skin, at least, may be due to autointoxication. This mode of origin is most probable in those exanthems which in their external phenomena and clinical course agree with the drug eruptions: all kinds of erythemata, urticaria, herpes, pemphigus. As to the autotoxic origin of eczema, the author thinks that the exacerbations so often seen in this disease may be due to toxic matters formed in the organism, but that the disease itself is not thus caused. Blaschko thinks it extremely probable that many cutaneous diseases may originate by a process of autointoxication, but positive proof is still wanting.

THE DERMATOSIS OF DUHRING OCCURRING IN PREGNANCY.

PERRIN, who has made a study of this disease, also known as herpes gestationis, arrives at the following conclusions (*Dermatose de Duhring au Cours de la Grossesse*):

1. Herpes gestationis is a variety of Duhring's disease. Pregnancy predisposes to it because of the troubles it causes in the function of the kidneys.
2. Duhring's disease seems to be connected with the presence in the blood, afterward in the skin, of a substance which is fixed by the white globules under the form of acidophilous granules.
3. The toxicity of the liquid in the vesicles appears to be due to this substance. It is this which produces the nervous effects of the disease, and perhaps the death of children in pregnant women who are affected by it.

INVESTIGATIONS CONCERNING THE ELEMENTS OF MOLLUSCUM CONTAGIOSUM.

BENDA (*Dermatologische Zeitschrift,* Band ii. Heft 3) reports some new observations concerning this much-discussed disease.

As to the origin of the molluscum tumors, he believes that they may start in the epidermis as well as in the hair-follicle, contrary to the opinions of Virchow and Israel, who assert that the follicle is the exclusive place of origin.

In the cell-bodies of the cells of the rete mucosum he found certain round or elliptical bodies which he designates "initial corpuscles." These bodies are always surrounded by a small unstained halo which the author regards as a vacuole. The three following peculiarities characterize these "initial corpuscles:" (*a*) Tingibility by means of a method which is especially distinguished by its affinity for the body of micro-organisms; (*b*) their sharp limitation against the cell-body; (*c*) third and altogether special variations of form, of size, and number, which can scarcely be explained except as phenomena of division and segmentation. Such phenomena can only be ascribed to parasitic structures. The author thinks that one should distinguish between the appearances due to cell invasion and the cell-changes produced secondarily through this.

MASSAGE IN THE TREATMENT OF ACNE OF THE FACE.

In a communication made to the Dermatological Society of Moscow (*Dermatologische Zeitschrift*, Band ii. Heft 3), POSPELOW calls attention to the good results which he has obtained from massage of the skin of the face in the treatment of acne in this situation. By means of massage the lessened tone of the skin, and especially of the sebaceous glands, is increased, and the thickened sebaceous matter expressed from the ducts of the glands. The rubbing should not be done at random, but should follow the direction of the gland ducts and the muscle-fibres of the skin in order that the sebum may be expressed from the glands. Massage should be done for ten minutes at a time, morning and evening, for several months, until the tone of the skin is restored and the openings of the sebaceous glands have diminished to their normal size.

THE PHYSIOLOGY OF THE TRICHOPHYTONS.

LESLIE ROBERTS (*Journal of Pathology and Bacteriology*, July, 1895), as the result of experimental observation, arrives at the following conclusions concerning the physiology of the trichophyton: There exists in the lowest order of plants destitute of chlorophyll an extensive group of fungi whose distinguishing feature is their ability to digest horny tissues, probably by means of a ferment. This keratolytic group includes favus (achorion), the various kinds of trichophytons, and some aspergilli, and probably many others not yet defined. There are two natural distinctions observable in the purely trichophytic fungi, namely, a kind that digests both the cuticle and cortical substance of the hair simultaneously, and a variety that digests the cortical substance first, leaving the cuticle unaffected or attacks it at a later period. The author rejects Sabouraud's terms "microsporon" and "megalosporon," and would suggest others founded upon this keratolytic property; he would designate the cuticle- and cortex-destroying varieties *trichophyta deformans*, and the cortex-destroying kind *trichophyta vagans*.

THE TRANSFORMATION OF ONE VARIETY OF CUTANEOUS TUBERCULOSIS INTO ANOTHER.

At a meeting of the Berlin Dermatological Society, held January 15, 1895, BLASCHKO presented two patients illustrating the transition of one variety of tuberculosis of the skin into another clinically different (*Dermatologische Zeitschrift*, Band ii. Heft 3). Both were originally cases of tuberculosis verrucosa cutis. In the first case, an indolent abscess formed at the site of the original lesion, which in time became transformed into a typical scrofuloderma. In the second case characteristic lupus tissue appeared at the margin of the old verrucose tuberculosis. These cases are regarded by the reporter as proving the pathological identity of tuberculosis verrucosa cutis, scrofuloderma, and lupus vulgaris.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

J. SOLIS-COHEN, M.D.,

OF PHILADELPHIA.

Mycosis of the Nose.

In a few remarks on "Some Cases of Mycosis of the Nose and Throat," beautifully illustrated, Dr. **Jonathan Wright** refers (*New York Medical Journal*, July 6, 1895) to a case which he recently saw at the Woman's Medical College. A middle-aged woman had some mycotic-looking white patches on the roof of the nasopharynx; but what especially attracted his attention were one or two pearly-white minute spots on the mucous membrane covering the anterior end of the inferior turbinated bone on each side. They could not be brushed away with cotton. Examination under the microscope showed them to consist partly of mycelial threads. The character of the growth in the nasopharynx was not ascertained. He has not thus far noticed the reports in literature of any such growths occurring in the nose.

Mucous Polypi of the Nose.

At the sixty-third annual meeting of the British Medical Association recently held in London (*British Medical Journal*, 1895, No. 1808), an interesting discussion took place upon the etiology of mucous polypi of the nose, which was participated in by Drs. **Guye**, of Amsterdam; **Luc**, of Paris; **Zuckerkandl**, of Vienna; **McBride**, of Edinburgh; **Hodgkinson**, of Manchester; **Spicer**, of London; **Hill**, of London; **Bosworth**, of New York; **Schmidt**, of Frankfort-on-Main; **Daly**, of Pittsburg; **Mackenzie**, of Baltimore; **Newman**, of Glasgow; **Williams**, of Bristol; **De Roaldes**, of New Orleans; and Mr. **Richard Lake**, whose habitat is not mentioned.

To sum up the points about which there can be the least contention, it may be assumed as the result of the arguments presented that the so-called mucous polypi in the nose are not really neoplasms, but inflammatory hypertrophies due to chronic irritation of the nasal mucous membrane, which undergo prolongation in consequence of gravity, traction, and the shape of the passages into which they protrude.

This chronic irritation may be of the most varied character; nevertheless, cases do occur in which no precedent irritation can be detected, hence the etiology is still undetermined.

Inasmuch as the lower portions of the nasal mucous membrane form the periosteum of the bone, inflammatory conditions at the surface produce hypernutrition beneath, and this leads to development of bone which may grow into the polypoid hypertrophy to the distance of a third or half an inch, to which it becomes firmly united, whether the new bone be hard or soft.

Neither necrosis nor caries is either a positive cause or result of these growths except, perhaps, in syphilitic subjects. These growths are most frequent beneath the middle turbinated body and in the neighborhood of the orifice of the sinus of the upper maxillary bone, the probable reason for this being that the mucous membrane in these regions is provided with folds and contains a larger number of glands.

CHRONIC DISEASE OF THE ETHMOID CELLS AND ACCESSORY SINUSES.

At the recent meeting of the Laryngological Association some very interesting discussions took place upon this subject.

PROF. BOSWORTH, of New York, reported (*New York Medical Journal*, 1895, No. 15) a case of melancholia dependent upon ethmoid disease, and cured by intra-nasal operation. This patient, a merchant of forty-two years, had a severe attack of influenza in 1876, which developed into well-marked hay-fever, attacks of which came on in August and lasted until frost, with some mild symptoms in the spring. Depression of spirits and sleeplessness began in 1881, and the patient soon fell into a sort of melancholia, at first periodic and later almost constant.

Under the advice of physician after physician he unavailingly made a sojourn in Bermuda; went to work, with his hours as long as possible; spent a fortnight in the Middletown Asylum; practised gardening; spent a summer in the Adirondacks; underwent a several months' course of electricity; adopted the Salisbury diet; was operated upon for varicocele; then tried Baunscheitsmus daily for three months along the spine; then had eyeglasses fitted for supposed error in refraction; was operated upon for stricture; had castration performed on perfectly healthy organs; underwent circumcision; had his pudic artery ligated; then he was operated upon for hemorrhoids; then he had his spine cauterized unavailingly; wore a seton in the back of his neck for a month; had the muscles of his eyeball operated upon and then a healthy eyeball enucleated—a veritable polyclinic subject.

After these ten years of hopeless and pathetic search for health he was advised to consult Prof. Bosworth. Dr. Bosworth discovered almost complete occlusion of the right nasal cavity by an angular deflection of the left side of the septum, into the hollow of which the swollen left middle turbinated body projected, and was covered by myxomatous tissue, showing distinctly the existence of ethmoid disease. The projecting portion of the septum was removed with a saw, and subsequently the projecting middle turnbinated bone was snared away. These operations were followed by prompt and immediate relief. The patient was able to resume business three days after the first operation, and is now at the head of a large concern which requires constant attention and acute business tact and judgment, while the hay-fever has been practically cured.

Dr. Bosworth likewise reported a case of suppurative ethmoid disease followed by invasion of the sphenoid sinus, abscess of the brain, and death.

An operation had given relief but for a day or two and a second operation gave but little relief for the time, and the patient died upon the day following. While there was no autopsy, there was little question that the cause of death was abscess at the base of the brain, caused by suppurating disease of the sphenoidal sinus, and that this was the result of a neglected suppurating ethmoiditis, the brain abscess having lasted twenty-four hours, the sphenoidal disease thirteen days, and the ethmoid disease having been a matter of years.

Dr. Bosworth in his entire experience had seen but two cases of sphenoidal disease, both of which had terminated fatally.

Dr. J. H. Bryan, of Washington, reported a number of cases of suppurative disease of the accessory sinuses, including abscess of the right maxillary sinus, resulting from dental caries; suppurating ethmoiditis terminating in caries of the anterior ethmoid cells; abscess of the left frontal sinus resulting from nasal polypi and hypertrophic rhinitis; abscess of the frontal, ethmoidal, and maxillary sinuses, with caries of the fronto-ethmoidal cells. Following this report is an elaborate and beautifully illustrated disquisition into the pathological anatomy of these lesions, with observations as to the proper method of managing them.

These papers were discussed by **Drs. Jonathan Wright, Ingalls, Gleitsmann, Daly, Mulhall, Thrasher**, and others, for details of which we must refer to the *New York Medical Journal*.

Chancre of the Tonsil.

The *Gazette Hebdomadaire de Med. et de Chirurgie*, 1895, No. 37, is almost completely devoted to a report of a very instructive lecture by **Prof. Fournier** upon this subject, in which he claims that the lesion is far more frequent than it is supposed to be, and that he for a long time had mistaken it for other lesions.

Boeck proclaims it the most common of all of the extra-genital chancres, and accounts for its frequency in Norway by the great number of poor families who use the same vessel for eating, some of them having but one spoon for the whole household.

The diagnostic features of the lesion, while not always absolutely unexceptional, are as follows: Unilaterality, hardness, and glandular engorgement at the level of the greater horn of the hyoid bone and along the thyroid cartilage, having the usual bubonic characters.

In the *Revue de Laryngologie, d'Otologie*, 1895, No. 18, **Dr. Mendell** describes an ulcerous chancriform amygdalitis which he claims is often mistaken for chancre. The lesion is unilateral. Its erosive varieties of aspect similar to those of chancre and their borders are hard; but the glandular enlargement is slight, moderate, and consists of two or three slightly developed glands which require palpation for their detection. This is the great symptom of differentiation from chancre, in which the enlargement often reaches the size of a pigeon's egg. This disease undergoes spontaneous cure in about a week, so that a mistaken diagnosis is very soon rectified without serious mishap.

In one of the cases reported the patient had small, linear, white herpetic erosions upon the border of the epiglottis, and this had led Dr. Mendell to the impression that this form of amygdalitis is probably a particular form of herpes, the vesicular period of which had passed unnoticed.

In the same number of the *Revue* DR. E. J. MOURE presents a long and illustrated article upon acute ulcerous lacunar amygdalitis, with some historical observations upon the lesion as reported by others under different names, and in which the local lesion, in its crater-like ulceration, often resembles chancre of the tonsil.

INHALATION.

DR. SOLOMON SOLIS-COHEN describes and depicts (*Philadelphia Polyclinic*, 1895, No. 20) a simplified resistance-valve for the pneumatic treatment of pulmonary affections in which, as a new feature, is combined an attachment for making an inhalation of some volatile medicament. Dr. Cohen does not consider this an important addition, but he believes that it may induce the patients to use the apparatus and thus reap the benefit of the pneumatic treatment.

OPHTHALMOLOGY.

UNDER THE CHARGE OF
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BILATERAL OPHTHALMOPLEGIA EXTERNA.

E. E. JACK reports (*Boston Med. and Surg. Journ.*, vol. cxxxiii. No. 3) a case of complete bilateral paralysis of the extra-ocular muscles, except that there remained power of turning the right eye slightly to the right and possibly movement downward to a very slight extent. The pupils, however, preserved their normal reactions, the left becoming not quite so small as the right. The patient was a girl, two years old, of good family history, who eight months before had become cross and restless, cried at night, rolled the eyes around, and at times looked cross-eyed.

Cases of this kind are clearly due to nuclear disease. Autopsies have shown destruction or compression of the nuclei secondary to other processes in 22 cases. In 11 of these there were tumors, mostly tubercles. In 10 there was hemorrhage into the region. In 19 cases the nuclei were primarily affected; with acute hemorrhagic inflammation in 7, and in twelve cases with degeneration, either inflammatory or atrophic. The nuclear paralysis may occur alone or with or as part of bulbar paralysis, tabes, syphilis, and other diseases. It is more frequent in males and in adults. Some of the acute cases die, many recover. The chronic progressive paralyses usually persist.

WHICH CANALICULUS TO SLIT FOR PROBING THE NASAL DUCT?

J. B. **STORY** urges (*Ophthalmic Review*, vol. xiv. No. 164) the slitting of the upper canaliculus rather than the lower, because it allows the more easy introduction of probes, allows less regurgitation of tears, and subsequent atresia causes less trouble than when the lower is slit. When the upper canaliculus is opened there is never failure to relieve the epiphora when the stricture is rendered patent.

PERFORATING INJURIES OF THE EYE BY PIECES OF COPPER AND THEIR TREATMENT.

TH. **LEBER** (Heidelberg) has pointed out that copper, by its chemical action, can cause purulent inflammation without the aid of microbes, and that it is particularly offensive to the retina, causing its detachment and atrophic degeneration. He therefore urges the prompt removal of such particles if their location can be known or guessed with some certainty. As to the supposition that even after the extraction of the piece of copper the eye may have to be enucleated to prevent sympathetic ophthalmia, he believes his experience gives a sufficient answer in the negative.

He reports (*Trans. Eighth Internat. Ophthal. Congress*) the results arrived at in 46 cases. In 6 the particle of copper was lodged in the anterior chamber or iris, and was removed successfully. In 40 it was in the posterior part of the eye, but only 38 came under treatment. In 9 cases immediate enucleation or exenteration was resorted to; in 4 only a preparatory iridectomy or cataract operation was done; in 25 the extraction of the particle was attempted, and in 18 of these cases (72 per cent.) was successful. Of these 18 cases 2 subsequently underwent enucleation, and in one other it was advised. In 8 cases a certain degree of vision was preserved.

FIELD OF VISION IN "NEGLECTED EYES."

G. E. **DE SCHWEINITZ** has published (*Annals of Ophthalmol. and Otol.*, vol. iv., No. 3) a series of cases of the type of monocular amblyopia common with convergent and divergent strabismus, with diagrams of the fields of vision for form and colors. Greater attention to this method of examination, he believes, would add to our knowledge of these amblyopias. These cases he divides into three classes: 1. Those in which the visual field for form and colors is normal or practically so. In cases of this class there is capacity of acquiring increased visual acuity. 2. Cases characterized (*a*) by contraction of one or more of the color fields, the form field remaining normal; and (*b*) by irregular contraction of both form and color fields, sometimes associated with extension of the field for red beyond the limits of the field for blue. 3. Cases in which, with or without concentric contraction of the color or form fields, there is (*a*) diminished color perception at and around the fixation point or between it and the blind spot, or (*b*) with scotoma chiefly for colors.

In the cases with marked abnormalities of the visual fields, particularly in the form of areas of diminished color perception or color scotomas, there are visible changes in the disks, although in no instance was such an appearance evident as may be seen in the nerve-head in toxic amblyopia. In these cases visual acuity did not improve.

REAL EXTENT OF THE COLOR FIELDS.

W. R. **GOWERS**, in his Bowman lecture for 1895, on "Subjective Visual Sensations" (*Ophthalmic Review*, vol. xiv., No. 164), points out that what are commonly referred to as the normal limits of the color fields are not by any means the extreme limits of the field, but only the limits of the portions of the color-fields within which an area of color of the size commonly employed for testing, 1 centimetre square, can be recognized. If the area is increased the field within which it is normally recognized becomes correspondingly enlarged. Thus for red the normal limit on the outer horizontal radius is commonly placed at 45°, but for a half-centimetre square it is only 35°, and for a quarter-centimetre square it is 25°. A two-centimetre square, however, is recognized at 60°, three at 70°, four at 78°, five at about 82°, and a six-centimetre square to the extreme edge of the field.

The same is true of other colors, and along the other radii of the field of vision, the field for green alone falling slightly within (about 5°) the field for white.

Gowers also calls attention to the "binocular intensification" of the fields. The field for every area of color is larger if both eyes are open. This is true not only in the part of the two fields which overlaps, but also in the temporal part of each field in which the field is single. Thus in the temporal horizontal field of the right eye, the one-centimetre square of red is seen at 42° with the left eye closed, at 60° with the left eye opened, although the left field only extends to 56° in that direction.

SCLERAL PUNCTURE, AN ADJUNCT TO IRIDECTOMY FOR GLAUCOMA.

PRIESTLEY SMITH (Birmingham) practises puncture of the sclera (paracentesis of the vitreous chamber, or posterior sclerotomy) as a means of reducing the tension of the globe before making an iridectomy, and thus rendering the latter operation easier, safer, and more effective.

The puncture is made at the temporal side of the globe a little below the horizontal meridian at least 5 mm. back from the margin of the cornea. The conjunctiva is slid on the sclera so that the wound in the latter will be separated from the opening in the former when they resume the usual relations, and a Graefe knife, with its back toward the cornea, thrust 10 mm. toward the centre of the vitreous, and twisted on its axis as it is slowly withdrawn, allowing some clear or yellowish fluid or a bead of consistent vitreous to escape.

Reporting his experience (*Trans. Eighth Internat. Ophthal. Congress*), he says in the majority of cases the iridectomy immediately followed the scleral puncture; in a few cases of special gravity there was an interval of several days between the two. In the series of forty-one cases treated in this way, the lens was wounded during the iridectomy in one case, and in another free bleeding into the anterior chamber occurred. In the other cases there was no disaster either during the operation or in the after-treatment. From the puncture the external bleeding is trivial, and internal bleeding has not been detected in any case.

OBSTETRICS.

UNDER THE CHARGE OF
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ASSISTED BY
WILLIAM H. WELLS, M.D.,
INSTRUCTOR IN OBSTETRICS IN THE PHILADELPHIA POLYCLINIC.

OVARIAN TUMORS COMPLICATING PREGNANCY AND LABOR.

In the *Monatsschrift für Geburtshülfe und Gynäkologie*, Band ii. Heft 4, STAUDE, of Hamburg, reports several interesting cases in which ovarian tumors complicated pregnancy and labor. His first patient was a multigravida who had been treated for an exudate in the pelvis. When pregnancy supervened her symptoms were augmented, and a tumor was diagnosticated. She was pregnant three months, and a tumor the size of a lemon was found in Douglas's cul-de-sac, and thoroughly adherent. Upon abdominal section, it was found necessary to carry the uterus to one side and to break up adhesions. In doing so the tumor burst, and its contents showed it to be a dermoid. It was removed, together with the right tube, which formed a pedicle. The patient made a good recovery, and pregnancy was uninterrupted. This case agrees with the researches of Jetter, who found that 19 per cent. of ovarian tumors discovered during pregnancy are dermoids, while in other series of ovarian tumors found in those not pregnant, but 4 per cent. are dermoids.

Staude's second case was like the first, except that the tumor was not adherent. Its removal left the uterus in retroflexion, and the patient wore a pessary for a few weeks. Her pregnancy was uninterrupted by the operation.

The writer reports a Cæsarean section for labor rendered impossible by an ovarian tumor. Upon opening the abdomen, it was found to be within the left broad ligament, and as large as a child's head. The right ovary was also the site of a tumor as large as an apple. An elastic ligature was placed about the uterus and the child removed, and the uterine incision closed with silk. When the elastic ligature was removed persistent hemorrhage followed. In view of the fact that both ovaries had been destroyed by disease, the operator decided not to preserve the uterus. He accordingly performed hysterectomy, treating the stump outside the peritoneum, and removing both tubes and ovarian tumors. The patient made a good recovery.

He also reports the case of a woman whose labor was interrupted by a tumor which forced forward the posterior wall of the vagina and caused the vulva to become greatly swollen. As labor pains were strong and the tumor could not be pushed up, Staude opened it, allowing considerable fluid to escape. He then incised the tumor, and found that he was dealing with a multilocular cyst. He succeeded in emptying this, and extracting the greater part of it through the vaginal incision. He also ligated the tube which came down with the tumor. Labor pains, however, became so violent that the child was forced down before he could complete the operation, and he was obliged to extract it quickly with forceps. After removing the placenta, he closed the incision in the vaginal wall with catgut suture. The patient made a good recovery. The last is one of the rare cases, and possibly the only one, in which ovariotomy has been performed through the vagina during the actual process of labor.

PUERPERAL BRADYCARDIA.

An explanation of the slow pulse commonly observed after labor is given by **NEUMANN**, assistant in Schauta's clinic in Vienna, in the *Monatsschrift für Geburtshülfe und Gynäkologie*, Band ii. Heft 4. The writer has observed, in 500 cases, not only a slow pulse after labor, but also that the normal rhythm of the pulse is destroyed. To determine the occasion for this, he gave belladonna to patients in sufficient quantity to influence the pulse. The result of his investigations shows that irritation of the cardiac filaments of the pneumogastric nerve produces the slowing of the pulse. He calls attention to the fact that the peripheral filaments of this nerve are not affected, as shown by the absence of any disturbance of respiration, or the action of the intestines. The site of irritation must then be found in the pneumogastric centre. It is interesting to observe that patients suffering from cardiac lesions do not manifest this symptom.

DIPHTHERIA AND PUERPERAL SEPSIS.

In the *Zeitschrift für Geburtshülfe und Gynäkologie,* 1895, Band xxxiii, Heft 1, **BUMM** contributes an interesting report of a case of puerperal diphtheria. Attention has already been called by Widal to a fibrinous membrane forming upon the mucous surface of the genital tract during certain cases of puerperal sepsis. This membrane, however, when subjected to microscopic examination, does not reveal the presence of diphtheritic bacilli, although streptococci are found in abundance. In the case reported the patient had been delivered of twins by a physician who was also in attendance upon several cases of diphtheria in children living in the neighborhood. On the evening of the third day after birth the patient was taken with a chill and fever, followed by the development upon the labia and in the vagina of diphtheritic membrane. On the eleventh day of the puerperal period diphtheria of the mouth and nose developed. The patient showed several attacks of very high temperature, followed by great prostration. Upon microscopic examination, diphtheria bacilli were found in the membrane upon the genital tract, although no streptococci were present. The treatment of the patient consisted in the free use of stimulants, and in three injections of antitoxin. Each injection was followed by a fall in temperature and general improvement in the patient's condition. The writer calls attention to the rarity of the case, as in the cases previously reported and called diphtheria streptococci have been found in abundance. The effect of the antitoxin is also interesting, and to this may possibly be owing the failure of streptococci to develop in the case.

THE DEVELOPMENT AND SIZE OF THE FŒTAL CRANIUM.

GOENNER, of Basle, has made an extensive series of observations upon the heads of children to determine the factors which produce the predominant features in the child's cranium, and to ascertain methods by which the size of the cranium may be inferred before labor (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxxiii. Heft 1). He concludes that in the majority of cases the cranium of the child resembles that of the parents. This undergoes change during the process of birth, but the resemblance develops continuously when the child recovers from birth-pressure. The heads of newborn children are much narrower at birth than later. As regards the resemblance which the child's head bears to one or other parent, it is impossible to say that either parent determines the shape of the child's head. Hereditary peculiarities may be present, dating back to grandparents. At present we possess no accurate means of foretelling peculiarities in contour in the fœtal head. Palpation and internal examination remain our only methods of obtaining knowledge.

SCORBUTUS FROM STERILIZED MILK.

In the *Münchener med. Woch.*, 1895, No. 42, **STARCK** points out the danger of scorbutus following a prolonged use of highly sterile milk. He calls attention to the fact that the presence of certain kinds of bacteria in the milk is not harmful, as even breast-milk is not always free from bacteria. He would limit the use of sterilized milk to seasons of very hot weather and to the dwellings of the poor.

AN ALUMINIUM CASE FOR OBSTETRICAL INSTRUMENTS.

VON HERFF calls attention in the *Centralblatt für Gynäkologie*, 1895, No. 39, to the utility of aluminium as a material in a case for obstetric instruments. The lightness of the material makes it possible to construct a case sufficiently large to carry the forceps and other instruments, and in which they can be sterilized without taking them from the case. The size of the forceps has rendered other cases too heavy to be conveniently carried.

OBSTETRIC STUDY BY FROZEN SECTIONS.

In the Edinburgh *Medical Journal*, October 18, 1895, **BARBOUR** concludes a series of papers upon the study of frozen sections and their bearing on the mechanism of labor. After passing in review the various sections which different investigators have described, he makes an estimate of the value of this method of study, which is briefly as follows: He considers that by means of such sections we have gained most in knowledge regarding the birth-canal. He acknowledges the limitations which are inevitable in such study, but considers that we have gained knowledge which revolutionizes our conceptions of labor by this method.

SYMPHYSIOTOMY WITH OSTEOPLASTIC RESTORATION OF THE SYMPHYSIS.

In the *Centralblatt für Gynäkologie*, 1895, No. 43, GEUER describes the case of a primigravida who was delivered by symphysiotomy and the use of forceps. As the vagina was small and illy-developed, the tissues were extensively lacerated, the anterior wall of the vagina being opened so that a communication existed between the symphysiotomy wound and the tear in the vagina. The lacerations were closed by sutures, and the symphysis wired together with silver wire. The wound became infected, and the patient made a tedious convalescence, being ill two months. The symphysis failed to unite, and after recovery from her labor the two halves of the pubic joint remained 2 cm. asunder. To remedy this defect, the old incision was reopened, and a flap of periosteum and bone was loosened from the ramus of the pubes, and turned upon its axis, and inserted between the cut ends of the pubic joint, which had been previously freshened. The skin was closed by dissecting up a flap and sliding it over the site of the original scar, which had been excised. The patient was convalescent in two weeks after the operation. Bony union was complete, and the patient could move about as well as before her labor. The pelvis was considerably enlarged, from one-half to one and one-half cm. in each measurement. Both the external and internal conjugates were increased one and one-half cms.

In discussing the performance of this operation at the time of labor, the writer is inclined to believe that the best results will be obtained when this procedure is deferred until after convalescence from labor. He would wait at least two weeks after the original symphysiotomy. He also states that, during the months of August and September last, five cases were operated upon by FRANK, in which the flap of bone and periosteum was placed within the symphysis at the time of delivery. The results of these five operations were all good.

A CASE OF SPONTANEOUS EVOLUTION DURING LABOR IN A PRIMIPARA.

The spontaneous termination of labor in transverse presentations is an occurrence of rarity even with multiparæ, and in patients having large pelves. The following case, occurring in a primipara, is certainly remarkable. GRASEMANN (*Centralblatt für Gynäkologie*, 1895, No. 43) reports the case of a primipara, a slender and not especially robust woman, whose pelvis was very slightly flattened, and in whom the fœtus lay in transverse presentation, the back directed posteriorly, the right arm having been forced down and into the vagina. The right shoulder was firmly wedged into the pelvis, and the chest of the child was deep in the pelvis. The head and breech had been forced upward. Uterine contractions were exceedingly strong. The patient was placed at the edge of a table, and an endeavor made to push up the arm and shoulder and perform podalic version. This failed entirely, as uterine rupture threatened during the attempt. One of two courses seemed possible for the physician in attendance: to perform embryotomy or to await the spontaneous expulsion of the fœtus. While preparing for embryotomy, the right shoulder was forced downward and gradually expelled, followed by the birth of the left arm and shoulder, then the chest and breech, and, finally, the legs were spontaneously delivered. The head was readily delivered by the attending physician. The pelvic floor and perineum were uninjured. The child had but recently died, was at full term, and of average length. The patient made an uninterrupted recovery.

GYNECOLOGY.

UNDER THE CHARGE OF

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OF NEW YORK.

OPERATION FOR CYSTOCELE.

Hadra (*Centralblatt für Gynäkologie*, 1895, No. 26) calls attention to the fact that cystocele is not cured either by ventro-fixation or by Alexander's operation, unless the natural curve of the anterior wall is also restored by shortening it antero-posteriorly. To accomplish this he dissects off a broad crescentic flap from the anterior lip of the cervix, which extends on both sides down the vaginal wall. The anterior vaginal wall is then drawn upward until the cystocele disappears, and the redundant portion of the flap is excised. While the left forefinger of the operator lifts up and protects the bladder, the cervix is drawn downward and backward by an assistant, and the vaginal flap is united to the cervix by silkworm-gut sutures.

The ordinary operations for cystocele aim at simply removing redundant tissue without restoring the relations of the portio and anterior fornix, as is done by the procedure before described.

The same operation is applicable to retroflexion with rectocele and cystocele, being supplemented by colpo-perineorrhaphy, and may be substituted for vagino-fixation in a considerable proportion of such cases. It has the advantage of leaving the uterus in a more nearly normal position than after the latter operation.

THE PROPHYLACTIC TREATMENT OF VESICO-VAGINAL FISTULA.

Schultze (*Centralblatt für Gynäkologie*, 1895, No. 27) calls attention to the fact that cervico-vesico-vaginal fistulæ tend to heal spontaneously, and that they are more frequent after labor than is generally supposed. On the contrary, minute vesico-vaginal fistulæ often require operative treatment.

Prolonged pressure of the head in delayed first stage after premature escape of the liquor amnii, especially in cases of contracted pelvis, is more apt to be the cause of cervico-vesical fistulæ than is instrumental delivery, although the laity are prone to attribute it to the latter. The unwise use of ergot is another prominent etiological factor.

After all difficult labors, in which the bladder has been subjected to prolonged pressure, the urine should be drawn regularly every eight hours for a few days. By adopting this simple procedure a considerable proportion of the cases of vesico-vaginal fistula can be prevented.

MICRO-ORGANISMS IN PYOSALPINX.

BOINET (*Mercredi Méd.*, 1894, No. 47) found streptococci in the pus from pyosalpinx, but demonstrated the fact that it was nevertheless sterile by injecting it into the peritoneal cavity in guinea-pigs, rats and rabbits. Though no reaction followed, characteristic cultures containing streptococci were obtained, which being injected into the cavity caused death from acute peritonitis. The writer infers that while pus containing these micro-organisms may remain in contact with the peritoneum without injury, in the course of a few hours they may attain marked virulence, provided that they find a favorable culture-medium such as a raw surface. Hence the practical deduction to drain in all such cases.

VAGINAL HYSTERECTOMY WITH CLAMPS.

LANDAU (*Centralblatt für Gynäkologie*, 1895, No. 27) reports 277 cases of hysterectomy in which clamps were employed, 112 for malignant disease with eight deaths, 54 for fibro-myomata with two deaths, and 109 for disease of the adnexa with a single fatal case. With the exception of one woman, who suffered from a fistula, the patients were entirely cured. The bladder was injured once, the ureter once, and the intestine five times.

The writer insists upon the necessity of thorough work. All diseased tissues should be removed; at the same time a conservative course should be followed wherever this is possible. He approves strongly of Dührssen's exploratory incision through the anterior vaginal fornix.

THE RELATION OF HÆMATEMESIS TO MENSTRUATION.

KUTTNER (*Berliner klin. Wochenschrift*, 1895, Nos. 7–9) notes that hemorrhages from the stomach are often periodical, bearing a close relation to menstruation, especially in cases of amenorrhœa, though they are not to be regarded as vicarious. In ulcer of the stomach menstruation may be suspended for a time, hence periodical hæmatemesis should awaken a suspicion that this condition may be present.

ŒDEMA OF THE BLADDER.

KOLISCHER (*Centralblatt für Gynäkologie*, 1895, No. 27) describes a peculiar form of œdema of the vesical mucosa observed through the cystoscope. It appears in the form of circumscribed blisters the size of a pea, the rest of the membrane being normal. In some cases the blebs are so large as to resemble vesicular moles. The symptoms in this condition are painful urination, tenesmus, and feeling of weight and pressure over the bladder.

This "bullous œdema" is regularly observed in connection with pelvic exudates adjacent to the bladder, especially when a pyosalpinx is adherent to that viscus. In cases of pelvic abscess in which this appearance was noted the œdema and vesical symptoms disappeared after the pus was evacuated. When a solid exudate was slowly absorbed the disappearance of the œdema was correspondingly tardy. It might readily be mistaken for malignant disease, from the symptoms as well as from the thickening of the bladder wall noted on palpation, but it is to be regarded as essentially of inflammatory origin.

As regards local treatment, irrigation of the bladder seems only to increase the patients' sufferings. The trouble being secondary to inflammatory conditions outside of the viscus, the latter must be cured before the vesical symptoms are relieved.

Chronic Fibrous Peritonitis.

Under this condition, GOLDENBERG (*Deutsche med. Wochenschrift*, 1895, No. 2) includes two cases in which he had an opportunity to make careful postmortem observations. The patients had ascites, cachexia and rapid emaciation, symptoms which, with the apparent presence of general thickening and nodulation of the peritoneum, might readily have been supposed to indicate malignant disease. The differential diagnosis is based upon the diffuse rather than circumscribed thickening, less resistance on palpation, less marked nodulation, and the clear rather than bloody ascitic fluid. Such patients usually succumb to exhaustion.

Adhesion of the Appendix to the Pelvic Organs.

CHOGNON (*Inaugral Thesis; Centralblatt für Gynäkologie*, 1895, No. 29) has collected statistics showing the frequency with which the appendix vermiformis is adherent to the pelvic organs. In twelve cases it was adherent to diseased adnexa, in twenty to ovarian tumors, once to a fibroid and once to an ectopic sac. The practical deduction is to examine the appendix in every cœliotomy in which adhesions are separated, and if it is adherent and sustains even the slightest injury during the separation, to extirpate it in every instance.

Combined Tuberculosis and Carcinoma of the Uterus.

NASSUER (*Inaugral Diss.; Centralblatt für Gynäkologie*, 1895, No. 29) reports the case of a patient, aged forty-five years, whose uterus was removed for carcinoma of the cervix. An examination of the specimen showed that beside the malignant disease of the cervix, two reddish nodules the size of cherries projected above the normal corporeal endometrium. Microscopically these consisted of numerous irregular, dilated glands, the lumina of which were partly empty and partly filled with leucocytes. There were also many giant-cells and a few tubercle-bacilli.

Steam as a Hæmostatic.

SNEGIREW (*Deutsche med. Wochenschrift*, 1894, No. 38) having employed steam in a series of experiments on animals in which portions of the liver, spleen, and kidneys were removed, and found that by this agent parenchymatous hemorrhage could effectually be controlled, applied the same hæmostatic in operations upon the human subject. In supra-vaginal amputation, myomectomy, etc., oozing was promptly checked on bringing steam in contact with the raw surface. After opening pelvic abscesses he fills the cavity with steam, which acts both as a deodorizer and promotes rapid granulation.

The writer has for several years used steam as a hæmostatic and astringent within the uterine cavity. The cervix is dilated, a fenestrated catheter introduced, and the latter is attached to a steam generator. The steam is allowed to escape for about a minute, when the endometrium is lightly cauterized, fetor and local sensitiveness disappearing. The operation is painless.

JAWORSKI (*Wiener med. Presse*, 1895, No. 3), following Snegirew's suggestion, introduces steam into the uterine cavity after divulsion and curettage, where it acts as an analgesic, hæmostatic, and antiseptic. He has used steam in a number of different operations (resection of joints, amputation of the breast, myomotomy, etc.) with good results, and recommends its general employment, especially in uterine surgery. Hemorrhage and foul discharges (especially in connection with carcinoma of the uterus) are the most important indications.

STERILIZATION OF THE VAGINA.

PICCOLI (*Arch. di ost. e Gin.*, 1894, 1–3) after a series of experiments decides that the best method of rendering the vagina aseptic is to swab the canal for from two to five minutes with sterilized salt solution (0.75 per cent.), then for the same length of time with strong sublimate solution, a Sims speculum being used.

SALIPYRIN IN UTERINE HEMORRHAGE.

ORTHMANN (*Berliner klin. Wochenschrift*, 1895, No. 7) reports fifty cases of menorrhagia treated with this drug. Thirty-two patients were under observation from nine to fifteen months, of whom twenty were decidedly relieved. Menorrhagia due to subinvolution following labor and abortion was most favorably affected. When disease of the adnexa was present the result was uncertain. Salipyrin is administered in doses of fifteen grains thrice daily, beginning a day or two before the expected flow and continuing throughout the period.

ILL RESULTS OF PELVIC MASSAGE.

POZZI (*Gaz. méd. de Paris*, 1895, No. 1) calls attention to certain evils resulting from pelvic massage. In one instance he demonstrated by cœliotomy that the blood from a hæmatosalpinx had been forced through the ostium abdominale, causing a localized peritonitis and abscess. It is impossible, as Doléris affirms, to evacuate the contents of a pyosalpinx into the uterus by massage, since the uterine opening of the tube is always closed, and the pus can only escape into the peritoneal cavity. Boully reported three cases in which serious consequences followed massage, one terminating fatally.

INFLUENCE OF SEA-BATHING ON MENSTRUATION.

HONZEL (*Annales de gynécol. et d'Obstét.*, 1894, No. 12) reports the results of careful observations in 123 fisherwomen, who, while living under the most unfavorable hygienic surroundings, had not the slightest disturbance during menstruation, although they often stood in the water for hours during the period. He infers that so far from sea-bathing being injurious, even during menstruation in those who are accustomed to it, this function is favorably affected, the sexual activity of women is prolonged, and they are more fruitful.

THE ULTIMATE RESULTS OF VENTRO-FIXATION.

Lèon (*Province Méd.*, 1895, No. 6) notes the following points to be observed in ventro-fixation in order to secure permanent results: 1. The uterine sutures must be permanent. 2. Several sutures should be used, two not being sufficient. 3. They must be passed through the anterior wall of the uterus, not through the fundus. 4. They should include at least a quarter of an inch of uterine tissue. If these precautions are observed the physiological increase of the uterus during pregnancy will not be interfered with, and the adhesions will not give way.

PÆDIATRICS.

UNDER THE CHARGE OF
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ASSISTED BY
THOMPSON S. WESTCOTT, M.D.,
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THE MORBID ANATOMY OF INFANTILE PARALYSIS.

E. F. Trevelyan, of Leeds (*Brain*, 1895, parts lxx. and lxxi.), reports the histological study of a case of infantile paralysis dying from independent causes eleven months after the onset of the disease. The case thus occupies a middle position between cases of very recent origin and the old cases in which the changes are so advanced as almost to preclude an opinion as to the starting-point of the disease. The changes here noted seem to be entirely in favor of the disease being primary in the neuroglia including the arteries. On the other hand, there was no definite localization of the disease to any one or more groups of ganglion cells. The overgrowth in the neuroglia, including the spider cells, was very striking, this being probably due to the irritation of the poisonous products (toxines) escaping from the blood, the infective theory apparently offering the best explanation of the etiology of the disease. In more chronic cases the overgrowth of neuroglia might be looked upon to some extent as supplementary, that is, the permanent vascularity being certainly not diminished and often increased, whereas the nerve elements have perished, there remains less tissue to nourish, hence the increased nourishment to the neuroglia leads to its overgrowth. Changes have been found in the neuroglia in quite recent cases, so that the irritation theory would appear best to account for the changes in the neuroglia, certainly in the earliest cases. In respect to etiology it is interesting to note that in this case, as in others previously examined, micro-organisms have not been found in the cord. Yet the possible occurrence of epidemics of infantile paralysis as recorded by Medin (*Centralbl. f. klin. Med.*, 1891), and the experimental evidence as given by Roger (*Revue de Méd.*, 1893), and more recently by Thoinet and Masselin (*Revue de Méd.*, June, 1894), strongly support the view that the disease is infectious. The last named observers injected preparations of the bacillus coli communis and the staphylococcus and determined spinal lesions at varying intervals after the inoculation, the peripheral nerves remaining intact. It is the poisons excreted by the micro-organisms that set up the disease, and this accounts for the early vascular phenomena found in the cord.

ERYTHEMA AFTER THE USE OF DIPHTHERIA ANTITOXIN.

MOUSSOUS (*Revue mensuelle des Maladies de l'Enfance*, October, 1895, p. 469) has made a study of nine cases of diphtheria treated with antitoxin in which erythema appeared. According to his observation this phenomenon occurs in one-fourth the cases—certainly a high percentage as compared with the experience of the majority of observers. Four types of eruption are recognized: 1. Generalized or localized erythema resembling the exanthem of measles, but without coryza, conjunctivitis, redness of the throat, or cough. 2. Scarlatiniform erythema, diffuse or in plaques, without sore throat, redness of fauces, or consecutive desquamation of the tongue. These two types may follow one the other in the same patient or be combined contemporaneously. 3. A nettle-rash erythema. 4. Petechial erythemia, of rare occurrence. The two latter types may be associated with the preceding two. These erythemas always have an absolutely symmetrical distribution, as upon both forearms, thighs, or cheeks. The duration is very variable, from several hours to two or three days, and the eruption may appear without fever or malaise; but most usually a decided elevation of temperature is observed. These general symptoms and fever may persist for two or three days, but usually subside with the disappearance of the erythema. A single injection of 20 cubic centimetres of serum may be sufficient to produce an eruption. This erythema, due to antitoxin, is a late manifestation appearing usually after the membranes have fallen and several days after the febrile reaction has subsided. Previous to the employment of serum-therapy an occasional cutaneous efflorescence was observed; but this was contemporaneous with the pharyngeal or laryngeal involvement, and was attended by no increase of fever. In 1500 cases Sanné observed this septic rash but 50 times, or 3.33 per cent., and Cadet de Gassicourt 37 times in 932 cases, or 3.96 per cent.

A CASE OF BRACHIAL DIPLEGIA FROM HEREDITARY SYPHILIS.

BÉZY (*Congress of Gynecology, Obstetrics, and Pediatry, Bordeaux*, 1895, in *Revue mensuelle des Maladies de l'Enfance*, September, 1895) reports the case of an infant two months old with a brachial diplegia of several days' duration. The father had contracted syphilis and had infected the mother shortly after the birth of their first child, the patient being the second.

Specific treatment effected a cure. There was no evidence of the pseudo-paralysis of Parrot. The author believes that the lesion was not in the anterior portion of the vertebral column, because of the absolute integrity of the lower limbs, but affected the nervous centres, and thinks the case should be classed with the cases recorded by Blocq (*Revue de Neurologie*, November 30, 1894), and by Vicarelli (*Arch. ital. di Pediatria*, September, 1891). The conclusion is that in cases of paralysis at this age, in the absence of the pseudo-paralysis of Parrot, it is necessary to look for a syphilitic paralysis of central origin for which mercurial treatment furnishes great chance of success.

THE ABSORPTION AND ELIMINATION OF LIME SALTS.

Some years ago Rudel published a study wherein he showed that when rhachitic infants are fed in the same manner as healthy ones their urine contains the same, or very nearly the same quality of calcium, and that in the two classes the elimination of lime salts increases equally under the administration of pharmaceutical preparations of lime. From this Rudel concluded that the absorption of lime salts from the intestine was accomplished in the same way in both rhachitic and non-rhachitic subjects, and that rhachitis should not be attributed to an insufficient absorption of the lime salts of the food.

In another series of experiments Rudel showed that the administration of acids capable of dissolving lime salts (*e. g.*, HCl) increased the elimination, and consequently the absorption of lime salts, and, *per contra*, that elimination and absorption are diminished by the administration of substances which possess the property of precipitating the lime salts (phosphate of sodium); and, finally, that absorption of lime salts is increased when the intestinal peristalsis is retarded (opium), and diminished when the contractions are increased (diarrhœa). Finally, Rudel showed that the proportion of lime salts is the same in the feces of rhachitics and of non-rhachitics when the two are submitted to the same diet or the same medication.

This work has been recently reinvestigated by REY (*Deutsche med. Wochenschrift*, 1895, No. 35, p. 569), who confirms the conclusions already drawn by Rudel. In the first series of experiments he shows that there exists a direct connection between the proportion of lime salts in the urine and those in the feces, so that a knowledge of the quantity of lime salts in the urine gives evidence of the absorption and elimination of these salts by the organism.

In another series of experiments made with rhachitics he demonstrated that the administration of a lime salt (acid acetate of lime) is followed for several days by an increase in the proportion of calcium in the urine.

In a third series of experiments the author studied the influence of phosphorated cod-liver oil, simple cod-liver oil, and phosphorus alone, upon the absorption and elimination of lime salts in rhachitics. The researches, based upon analyses of the urine, showed that the phosphorated oil decidedly increases both absorption and elimination, even more notably than the plain oil. On the other hand, phosphorus alone seemed not to exercise any influence upon either process.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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Pus.

In the course of an exhaustive investigation of suppuration in all its phases, the results of which have been published from time to time during the past few years, **Janowski** has had occasion to examine pus from a great variety of sources. The facts which he has thus accumulated are brought together in an article entitled "The Morphology of Pus from Various Sources," in a recent number of the *Archiv für experimentelle Pathologie und Pharmakologie*, 1895, xxxvi. 8.

The article embraces the results of the study of pus produced experimentally, as well as that obtained from ordinary suppurative processes in man. Mercury, turpentine, croton oil, creolin, and silver nitrate were found to produce characteristic suppurative lesions in rabbits and dogs when injected subcutaneously, and since in most of these cases the progress of the pus formation was comparatively slow, it was possible to follow the process from step to step with much accuracy. In all of these cases the process was essentially the same. When examined within two or three days after injection of the irritating substance the tissue was found to be infiltrated with small spheroidal cells in every way identical with the mononuclear leucocytes of the blood. There was at this time but little evidence of degenerative change, except where the needle of the syringe had destroyed the tissue. A few days later, however, unmistakable degenerative changes were present. The nuclei of many of the leucocytes had assumed the horseshoe shape, or had already broken into several fragments. Those of others had lost in a measure their power of staining with the ordinary basic dyes; their chromatin seemed to have become less abundant or to have diffused itself throughout the whole cell body, and this last was found to have become diffusely filled with the neutrophile granules of Ehrlich. Usually by this time also a distinct necrotic area had formed about the central purulent mass, in which various stages of degeneration of the tissue elements were readily visible. External to this the tissues were infiltrated with mononuclear leucocytes similar to those which had originally occupied the space which has now become the centre of the abscess.

As the process became older the number of polynuclear cells increased, their cell bodies gradually became larger, and the neutrophile granules little by little disappeared, at first from a portion of the cell protoplasm, then from the whole cell body. At about this time small irregular globules of intensely staining substance appeared in various parts of the cell body and later extracellular. In these cells the nucleus was, for the most part, very indistinct, and, as the result of careful microchemical tests, Janowski was led to the conclusion that the small globules in question were small masses of chromatin which had been extruded from the nucleus in the course of its degeneration. They were apparently structureless, were irregular in shape, of various sizes, and as many as five or six were present at times in a single cell. Eosinophile leucocytes were almost constantly absent.

Abscesses experimentally produced in dogs by inoculations of the *bacillus typhosus* alone or in association with the staphylococcus pyogenes aureus or streptococcus showed the same transition as that described above as having resulted from injections of chemical irritants. The pus of such abscesses, when examined between the third and seventh days, was composed at first of mononuclear and polynuclear cells, of cells showing "transition" nuclei from mononuclear to polynuclear; later, of polynuclear cells only. In all cases the wall of the abscess contained only mononuclear cells, except in immediate proximity to the older pus. In one of these cases, in which the pus was examined on the fifteenth day, chromatin globules were also present.

Similar appearances were observed in human pus obtained from various sources. In the pus of a perinephritic abscess all the changes were particularly well illustrated. A very few lymphocytes only remained, the majority of the cells being polynuclear neutrophile cells or showing transition nuclei. In a few cells the degeneration had proceeded further, the nuclei had almost disappeared, the neutrophile granules were no longer visible, and in many of these cells there were one or two chromatin masses.

A few eosinophile cells were found in the pus from a small skin abscess in a case of glanders. These cells have been previously described in pus from subcutaneous suppurative processes, and Janowski has also seen them in gonorrhœal pus; but, with these exceptions, their occurrence in pus is believed to be very unusual.

Chromatin masses were abundant in an actinomycosis suppurative focus of three months' duration; and in the pus from two cases of chronic abscess of the antrum of Highmore leucocytes were no longer discernible, the entire mass being composed of granular débris and chromatin globules of various sizes.

In summing up the results of his investigation, Janowski expresses himself as very decidedly of the belief that in suppurative processes it is the mononuclear leucocyte which leaves the bloodvessels and infiltrates the inflamed tissue, and that the polynuclear cell, so abundant in ripe pus, is derived from this by fragmentation of the nucleus, which, in common with all forms of nuclear multiplication by direct division, must be regarded as degenerative and as evidence of beginning disintegration of the cell. The significance of the neutrophile granulation of the protoplasm is uncertain, but the later disappearance of the granules, the swelling of the cell body, and the appearance of chromatin masses are all regarded as further unmistakable evidence of degeneration.

The rapidity with which these degenerative changes occur varied in different cases, apparently with differences in the cause of the suppurative process in each case. In the pus resulting from chemical irritants they were often more rapid than in that produced by the action of micro-organisms, complete disintegration of the cells having been most quickly brought about by the action of mercury, creolin, and nitrate of silver.

[The results here recorded, and the inference from them as to the variety of leucocyte which leaves the bloodvessels in suppurative inflammation, are distinctly at variance with the observations of most previous investigators, who have particularly noted the emigration of polynuclear leucocytes, and have also established the fact that in the leucocytosis consequent upon inflammatory conditions it is the polynuclear cells which are especially increased in number. Nevertheless, Janowski may be right in tracing the origin of the polynuclear leucocyte to the lymphocyte, for it is quite possible that in infectious suppurative processes in man the presence of bacterial toxines or of the bacteria themselves in the blood may induce changes in the leucocytes still in the circulation similar to those which Janowski reports as occurring in the leucocytes which have found their way into the tissues. Furthermore, Janowski does not deny the emigration of a few polynuclear leucocytes, and it is universally admitted that some mononuclear leucocytes are always present in the exudate in suppurative inflammation, so that observations which now appear somewhat contradictory may ultimately harmonize. It seems not unlikely that some, at least, of the mononuclear cells described by Janowski as so abundant at the periphery of the abscess may have been young connective-tissue cells whose growth had been stimulated by the proximity of the purulent mass.]

SYPHILIS AND TUBERCULOSIS.

HOCHSINGER reports three cases in which hereditary syphilis and tuberculosis were associated in young children (*Wiener medicin. Blätter*, 1894, No. 20). In all the character of the tubercular lesions was unmistakably shown by the presence in them of the tubercle-bacillus.

In the first case the father was syphilitic, the mother tubercular, and since the child's death occurred on the thirty-first day there seems to be no doubt that the syphilitic infection was spermatic, and that the tubercular was placental.

In the second case there was a marked skin eruption and a clear history of syphilis in one of the parents, but a pneumonic process which had been supposed to be luetic turned out to be tubercular.

In the third child there was tuberculosis of the lungs, lymph nodes, and spleen; syphilis of the liver and of the skin.

It is insisted that the only reliable means of differentiating tubercular and syphilitic lesions in young children is by the discovery of the tubercle-bacillus, and Hochsinger urges a more careful scrutiny in this regard of cheesy masses frequently found in syphilitic children, believing the association of tuberculosis and syphilis to be much less rare than has been heretofore supposed.

We have received from Macmillan & Co. the latest addition to their series of manuals for students in the shape of a handy volume containing the directions for "A Course of Elementary Practical Bacteriology, Including Bacteriological Analysis and Chemistry," by A. A. KANTHACK and J. H. DRYSDALE.

The book covers the course of bacteriology given at St. Bartholomew's Hospital, and is divided into three parts to meet the requirements of the beginner and of more advanced workers.

Part I. comprises general bacteriology, and in it are found directions for the inoculation of culture media, for the staining and study of the morphology and physiology of bacteria in general, and of the more prominent of those pathogenic for man.

Part II. is devoted to bacterial analysis. It includes directions for the preparation of the various culture media, for the bacterial examination of water, milk, air, meat, soil, antiseptics, etc.; for the examination of the body of an animal dead of a bacterial disease, and for the testing of the efficiency of filters.

In Part III. are found general directions as to the various modes of studying the chemistry of the bacteria.

The descriptions of the various processes are explicit and sufficient; the book is of convenient size and is well printed, and should be a useful guide to practical bacteriological work in the laboratory.

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

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AND

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SCHOOLS AND DIPHTHERIA.

That the falling off in the mortality from infectious and preventible diseases, that has been proceeding in England for the last twenty-five years, is the direct effect of the generally improved conditions as regards water-supply, sewerage, drainage, and ventilation under which the mass of the population live, in consequence of successive Public Health Acts and others for the housing of the working classes, the notification, etc., of infectious diseases, Building Acts, and the like, is clear from the fact that it is most marked in those which, like enteric fever and diarrhœa, are dependent on filth and polluted water supplies; phthisis, favored by damp sites and ill-ventilated houses and workshops; scarlatina, in which the facilities now afforded for isolation in fever hospitals, and the prompt disinfection of the houses by the local sanitary authorities, contribute to the suppression of the outbreaks.

But diphtheria, which, originating in insanitary conditions and spread by personal contact and intercourse, holds a place midway between, or rather partakes of the characters of enteric and scarlet fevers, shows a tendency to increase, or at any rate remains stationary, constituting an *opprobium medicinæ*, and provoking incredulity as to the reality of the benefits alleged to follow the outlay on sanitary improvement.

I have, however, long maintained that this failure of sanitation to reduce the mortality is only apparent, and that its benefits are merely masked by the influence of an opposing factor which they neutralize or which neutralizes them. This is the concurrent increase in opportunities for personal infection consequent on the massing of large numbers of children in schools: that in fact the Education Act of 1870 tends to neutralize the effects of the Public Health Acts of 1875 and subsequent years, and this in constantly increasing ratio, as it has been more and more strictly enforced. Indeed, there was, at the time when the earlier sanitary acts came into force, a marked reduction in the death-rate from diphtheria, but soon after 1870 this improvement was arrested. When my friend, Mr. Shirley F. Murphy, Medical Officer of Health to the London County Council, turned his attention to this question, I pointed out that, if my contention were correct, an analysis of the ages of the cases notified would show that there was a heavier incidence during school life, with a lesser liability to attack at other ages, *i. e.*, under five and over fifteen years. This was fully confirmed by his inquiries, but since it might be urged that the age period in question was itself more exposed in other ways or more susceptible, he determined to test the influence of the temporary withdrawal of the factor of school attendance during the summer holidays, as indicated by the number of cases at each age-period in three consecutive periods of four weeks; the middle one commencing a week later than the holidays, and the last a week after reopening, to allow for the incubation and notification of the disease.

The results in 1893 were more striking than those of 1892, but each showed a decrease in the disease among *school* children during the holidays and a marked increase after the reopening of the school, no such relation appearing at other ages. The holiday depression in the incidence of the disease among school children is visible, indeed, in the curve for all ages, these constituting the great majority of the cases. The same ratios as regards age and time are seen in the curves of scarlatina, a disease which agrees with diphtheria in the mode of its propagation, its intense contagiousness, in being especially one of childhood, and in its prevalence in London from June to November with its maximum in October; though from being more easily recognized and from the ampler provision of hospital accommodation the actual mortality at all ages has been greatly reduced, which unhappily cannot yet be said of diphtheria.

Scarlatina.

Increase or decrease:	Under 5 years.	5–15 years.	Above 15 years.
Per cent. of number of cases in second period in relation to that of the first period . .		1892	
	+25	−9	+9
		1893	
	−1	−26	−17
Per cent. of number of cases in third period in relation to that of the first . . .		1892	
	0	+52	+15
		1893	
	+9	+65	+26

Diphtheria.

Increase or decrease:		Under 5 years.	5–15 years.	Above 15 years.
Per cent. of number of cases in second period in relation to that of the first period.	1892	+20	—3	—10
	1893	—8	—27	+1
Per cent. of number of cases in third period in relation to that of the second.	1892	—7	+29	+34
	1893	+6	+81	+33

WATER FILTRATION AT BERLIN.

The new water-works at Berlin, no less than the cattle and meat market and the sewerage-works, furnish an object lesson for the world, not that the construction of the filter-beds or the general arrangement differs materially from what may be seen in any large town in Europe or America, but in the scientific control exercised over the process. The old works at Stralau, on the Spree, have been abandoned as dangerous from the extension of building and river traffic, as have been the wells sunk in the sandy soil on account of the ferruginous character of the water, and the supplies are now drawn from the Tegel See and Müggel See, two beautiful lakes about twelve miles from the city, remote from human habitations and surrounded by pine forests At both there are small bacteriological laboratories, and the water from each of the filter basins is examined daily by Dr. Proskauer, who has been engaged at this work, formerly at Stralau and subsequently here, for the last ten years, assisted by Drs. Piefke and Fraenkel. It was Proskauer who first showed that it was not the sand alone, but the aloid vegetation forming a felty film on its surface, that constituted the actual filter, arresting bacteria and removing or destroying the dissolved organic matters; and so much importance is attached to this that the filtrate passing through the sand for the first twenty-four or forty-eight hours after the beds have been cleaned is rejected, a precaution which is not, we believe, adopted out of Germany.

The filters are twenty-two in number, each having an area of about half an acre, and of these sixteen are in constant use, while the remaining six are being cleaned. They are vaulted over, the masonry being covered with sand to the depth of a metre, not only to protect the water from the sun's rays, but from the frost which would interfere with their action; and the rate of filtration is carefully regulated by a valvular communication between the reservoirs on either side, so as to maintain a uniform velocity of not more than 100 mm., or say 4 inches per hour, the aperture being gradually enlarged as the increasing density of the film tends to impede the flow.

The failures of filters to exclude pathogenic microbes are mostly due, the process being conducted too rapidly, to the beds being used before the film has had time to form, or to some breach in it after it has been formed; and the daily examination of the filtrate is the only possible means of avoiding such misfortunes.

The three rules or conditions of filtration laid down by Koch are strictly observed at Berlin and several other German towns:

1. That the rate of filtration shall never exceed 100 mm. per hour.
2. That the filtrate from each basin shall be examined bacteriologically once daily so long as it is in use; and
3. That filtered water containing more than 100 bacteria in the c.c. shall be rejected, or pumped back into the unfiltered reservoir.

The number in the water now supplied to Berlin rarely amounts to 50, that of the unfiltered Tegel water being usually under 200, and only occasionally after very heavy rains approaching 500, whereas that of the Spree contains 10,000 to 100,000 or more.

The Berlin experts consider that a well-arranged filter worked according to Koch's rules should reduce the bacteria in the ratio of 1:1000; but Prof. Kabrhel, of Prague, has shown that this estimate is too low, and that the proportion may be as 1:1666 or 1:1750. For all practical purposes, therefore, sand-filters may be considered perfectly satisfactory, provided the results are submitted to daily examination; otherwise they may prove illusory, and this duty is absolutely incumbent on all water companies or municipal authorities.

DRY METHODS OF DEALING WITH URINE.

DR. G. V. POORE'S experiments (*British Medical Journal*, August 31, 1895) show that when mixed with absorbent material and exposed to the air urine never becomes offensive, although a great deal of ammonia is developed. A flannel bag, two and one-half feet long and a foot broad at the bottom, containing six pounds of dry sawdust, received in the course of two months thirty-nine pounds of urine; after about a year forty-five pounds more were added during a period of three months. Notwithstanding that the bag had become so rotten as to hardly hold together, the contents were not in the least offensive, and had never given off any offensive odor. Of the eighty-four pounds of urine added, only six pounds had filtered through, while the rest had evaporated or been retained. The filtrate was dark brown in color, thick, and of high specific gravity, but never offensive, nor had it shown after lying about for months any tendency to putrefy or become offensive. Filtration through earth, old stucco, and peat moss gave identical results. With fresh earth, fresh stucco, and fresh ashes the filtrate is almost colorless and odorless, but the power of ashes to give this result is short-lived. As far as could be judged from limited experience, sawdust thus soaked with urine becomes a valuable manure.

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Dr. PRESTON ROANE, *Winston, N. C.:* In the case of **almost total suppression of urine,** in a woman in **the latter stages of gestation, with strong threatenings of convulsions,** after exhausting without effect, the most potent Diuretics of the Materia Medica, I put her upon the **Buffalo Lithia Water,** half a gallon a day, which produced a copious action of the kidneys, and was followed by relief of the alarming symptoms. **I attribute the safe termination of the case entirely to the use of this water.**

Dr. ALFRED L. LOOMIS, *Professor of Pathology and Practical Medicine in the Medical Department of the University of New York:* "For the past four years I have used **Buffalo Lithia Water** in the treatment of **Chronic Bright's Disease of the Kidneys occurring in gouty and rheumatic subjects, with marked benefit."**

Dr. WILLIAM A. HAMMOND, *Washington, D. C., Surgeon-General U. S. Army (retired), formerly Professor of Diseases of the Mind and Nervous System in the University of New York, etc.:* "I have for some time made use of the **Buffalo Lithia Water** in cases of affections of the nervous system, complicated with Bright's Disease of the Kidneys or with a Gouty Diathesis. The results have been eminently satisfactory."

HUNTER McGUIRE, M. D., LL. D., *President and Professor of Clinical Surgery, University College of Medicine, Richmond, Va., says:* "**Buffalo Lithia Water,** as an alkaline diuretic, is invaluable. In Uric Acid, Gravel, and, indeed, **in diseases generally dependent upon *a uric acid diathesis,* it is a remedy of extraordinary potency.** I have prescribed it in cases of Rheumatic Gout, which had resisted the ordinary remedies, with wonderfully good results. **I have used it also in my own case,** being a great sufferer from this malady, **and have derived more benefit from it than from any other remedy."**

Dr. MARTIN L. JAMES, *of Richmond, Virginia, Professor of Materia Medica and Therapeutics, Medical College of Virginia,* reported a case of **Congestion of the Kidneys** to the Richmond Academy of Medicine. "The case was that of a lady eight months advanced in Pregnancy, attended by **marked Œdema,** both over the extremities and surface, and by Uræmic Poisoning to such an extent as very seriously impaired the vision of the patient. The patient was relieved by the free use of **Buffalo Lithia Water** for three weeks. Other remedies, he stated, were used in these cases, but the favorable results seemed clearly attributable to the action of the water."

Dr. WILLIAM B. TOWLES, *Professor of Anatomy and Materia Medica in the Medical Department of the University of Virginia:* "I feel no hesitancy whatever in saying that in **Gout, Rheumatic Gout, Rheumatism, Stone in the Bladder, and in all Diseases of Uric Acid Diathesis, I know of no remedy at all comparable to Buffalo Lithia Water.** Its effects are marked in causing a disappearance of albumen from the urine. In a single case of **Bright's Disease of the Kidneys,** I witnessed decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease."

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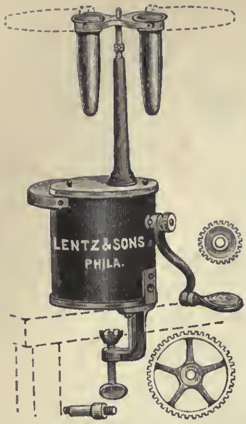

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